Telephony

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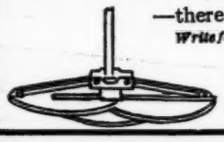

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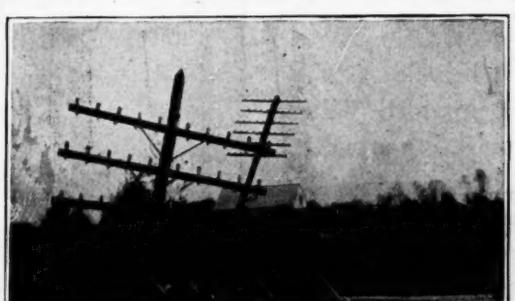

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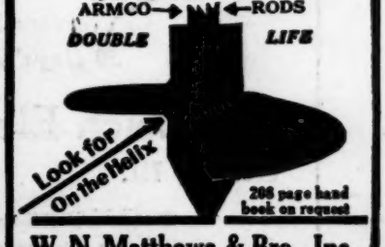

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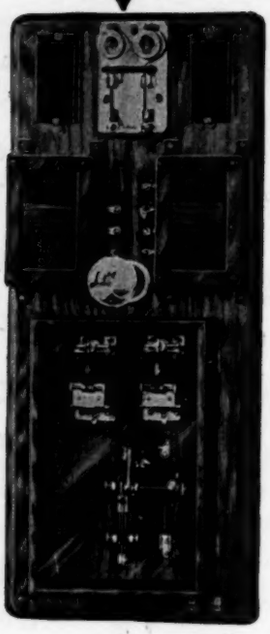

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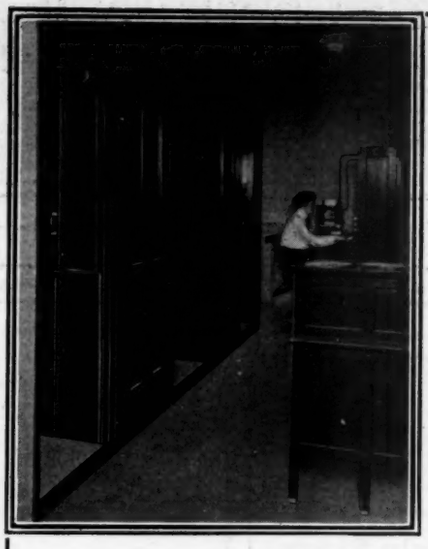

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Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves

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Studying with Success.

Whoever wishes to study with success must exercise himself in these three things: In getting clear views of a subject; in fixing in his memory what he has understood; and in producing something from his own resources.—Agricola.

Efficiency of the Telephone.

"Oldest attaches of the White House regard President Wilson as the most methodical, systematic, time-saving chief executive within their memories," says a Washington dispatch of this week. Then it is related how he has religiously conserved his time. One of the statements made regarding the means of doing this is:

"Mr. Wilson uses the telephone very much on the theory that it shortens conversations and keeps the parties to the conversation to the subject intended."

So we learn that the holder of the highest office in this country has recognized the efficiency of the telephone. He uses it because he must, of necessity, in these times of great stress, maintain close association with his counselors in the conduct of the nation's affairs. They are readily accessible at any hour. That, in the face of the many sudden and startling developments of the past year, and especially the last few months, is a relliever of tremendous power. It takes away, to a considerable extent, the nerve strain incident to waiting for messengers to return. The President knows at once when the person summoned may be expected for conference.

Not only does the President utilize the telephone to a large degree, but it is being depended upon to aid in mobilizing the forces of the nation, should this become a necessity. The advantages of quick action in such an event cannot be estimated.

In Europe, the warring nations have discovered the value of the telephone. We are told that one of the first acts of the German officials upon learning of the severance of relations by this country. was to isolate Ambassador Gerard by cutting off his telephone connections. In the direction of the forces in the field, the telephone has had a most important part. In fact, it has won many a skirmish.

There is no question but that its use in commercial and social pursuits will be greatly increased, when peace comes, through the revelations in its utility as a result of its efficiency on the battlegrounds. Both in peace and war the telephone has demonstrated its efficiency.

When the world war is ended, we may expect a tremendous increase in its utilization in the foreign countries. The increase in this country in the last few years has been at the rate of approximately 10 per cent. annually. The saturation point has not been reached by any means. There is still opportunity for development along lines which have been scarcely touched. There will be increases in American telephone development in the next ten years, which will undoubtedly greatly exceed that of the last ten, for a new era is being entered.

A Thriving Industry.

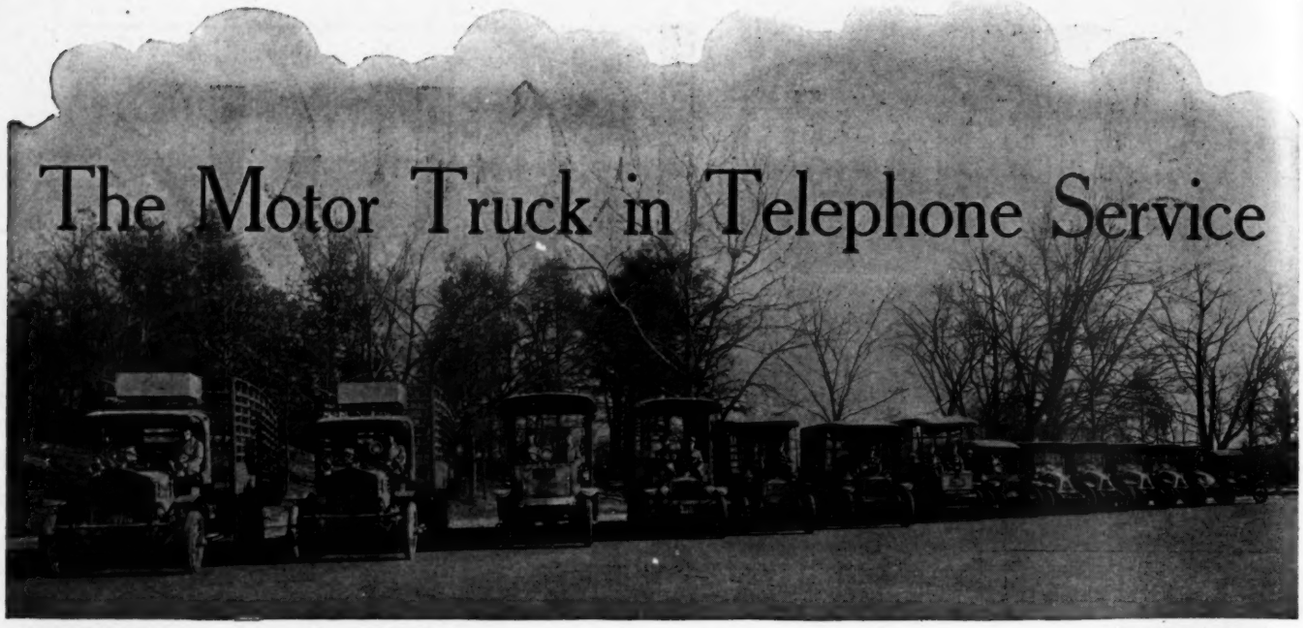
"How's business?" is usually the second inquiry made when two men meet in a conference where matters pertaining to a particular industry are discussed.

This query was put to the representative of a big Independent telephone company at the recent meeting of the board or directors of the United States Independent Telephone Association in Chicago. A cheerful smile wreathed his face as he replied:

"Well, all I can say is this: In 1914 we bought $40,000 of telephone apparatus from a certain manufacturer. In 1915 we bought $80,000 from the same concern, and in 1916 we bought $120,000 from that firm, besides a lot from other Independent manufacturers.

So far in 1917, we have bought $110,000 worth of equipment and need a lot more right now. I think that answers your question, doesn't it?"

It did. Under fair conditions, such as the laws require in all industrial fields, business should be good in the Independent telephone line. We hope to see a decided improvement in 1917, and shall watch developments with interest.



The Motor Truck in Telephone Service

Motor Equipment Ranges From a "Mosquito Fleet" to Fully Equipped 10,000-lb. Trucks—Trailers Successfully Used—Published Through Courtesy of The Commercial Car Journal.

By C. L. Edholm.

MOTOR delivery efficiency is peculiarly well demonstrated in the service of the New York Telephone Co., as the problems are many and varied. The loads carried run from a one-pound article that must be delivered with speed, to a trailer load of poles or a reel of cable weighing 4,200 lbs. Therefore the commercial cars used by the company include 10,000-lb. trucks, lighter cars carrying from 1,000 to 6,000 lbs. and delivery wagons that handle loads from 750 lbs. to half a ton. In addition, there is a "mosquito fleet" of runabouts, motorcycles (with and without side cars) and bicycles—every vehicle being adapted to some special need.

These machines operate over an area of about 1,500 square miles, including the congested streets of Manhattan and the suburbs extending over Long Island, up and into New Jersey. In this district there are four thousand telephone men, constantly on the job, in crews or as single workers, whose work requires them to move from place to place frequently, so that the transportation of this force alone is a big problem.

The road conditions vary likewise, with difficulties ranging from the deep sand of country roads to the crowded traffic of the streets down town. The weather conditions are all that New York climate has to offer in the way of blizzards and blistering heat, for the telephone business is one that has to continue through all weathers, and a big storm merely means more activity among the repair men.

The transportation problems, indicated briefly, have been met with complete success by this big company, with the aid of the wonderfully adaptable motor vehicles so essential to twentieth century business.

To secure economy in handling the 9,000 kinds of material used in the telephone plant, there are several warehouses and supply depots in different parts of the metropolitan area, and 54 such warehouses and 180 central offices at points convenient for distribution. Therefore there is a wholesale delivery system, making use of cars of from one and one-half to five tons capacity, which permits transporting full loads from the central warehouse to the substations.

Included in the wholesale operations is the moving of consignments of poles, cables, etc., from the nearest railroad terminal to the construction work in which they are required. For extensive jobs the freight shipments are so arranged as to allow the materials to reach the railroad terminals about when needed, so that they need not remain in storage.

The retail distribution consists of the delivery of unit packages to the subscriber's home or office, where the telephone is to be installed. For this the 750 to 1,500-lb. cars are utilized. The range of costs varies therefore remarkably, being as low as eight cents per ton-mile for wholesale delivery and as high as $3.75 for retail delivery.

The figures for 1915 indicate the extent of the transportation business operated by this company. Deliveries from the central warehouse numbered 110,000; the weight of materials handled was 10,700 tons and the number of miles traveled, 161,000, requiring the services of 15 trucks.

Transportation costs are minimized by applying to each service the most economical and efficient type of vehicle, thus the "troublemen," the inspectors and the men who install instruments have bicycles for work in the congested area, where the trips are short and the total number of miles is small. About 300 bicycles are so used, while more than 200 motorcycles and 30 more with side cars are employed for similar work.

Motorcycles operate in the less thickly-populated sections where the distances between jobs are greater. With the side cars, an extra man and considerable material may be carried.

The lightest automobile used is the Ford runabout for supervisory work. Simplicity of mechanism, reliability, light weight and cheapness are the requisites for this service, and 218 runabouts and 15 Ford delivery cars are in use for inspection trips and light delivery. For the latter, the runabouts may be fitted with box bodies, and as convertible cars give double service.

Next come the 1,000-lb. delivery cars, ten Vim delivery wagons, while among the 1,500-lb. machines are 23 Stewarts and three other makes, a total of 36. The delivery cars have enclosed panel type bodies, to keep the contents dry. They make from 46 to 60 deliveries a day within a 25-mile route and carry small loads,

averaging from one to 20 lbs. to each delivery point.

For the cars ranging from 1,500 to 4,000 lbs. capacity, three types of bodies are used—the panel type closed car, the open express with solid top and the open body with side racks. They are for medium weight deliveries, the two-ton trucks carrying gangs of eight or ten men on construction jobs that require several moves a day. They carry much of the material required on such jobs as well as the laborers and their tools.

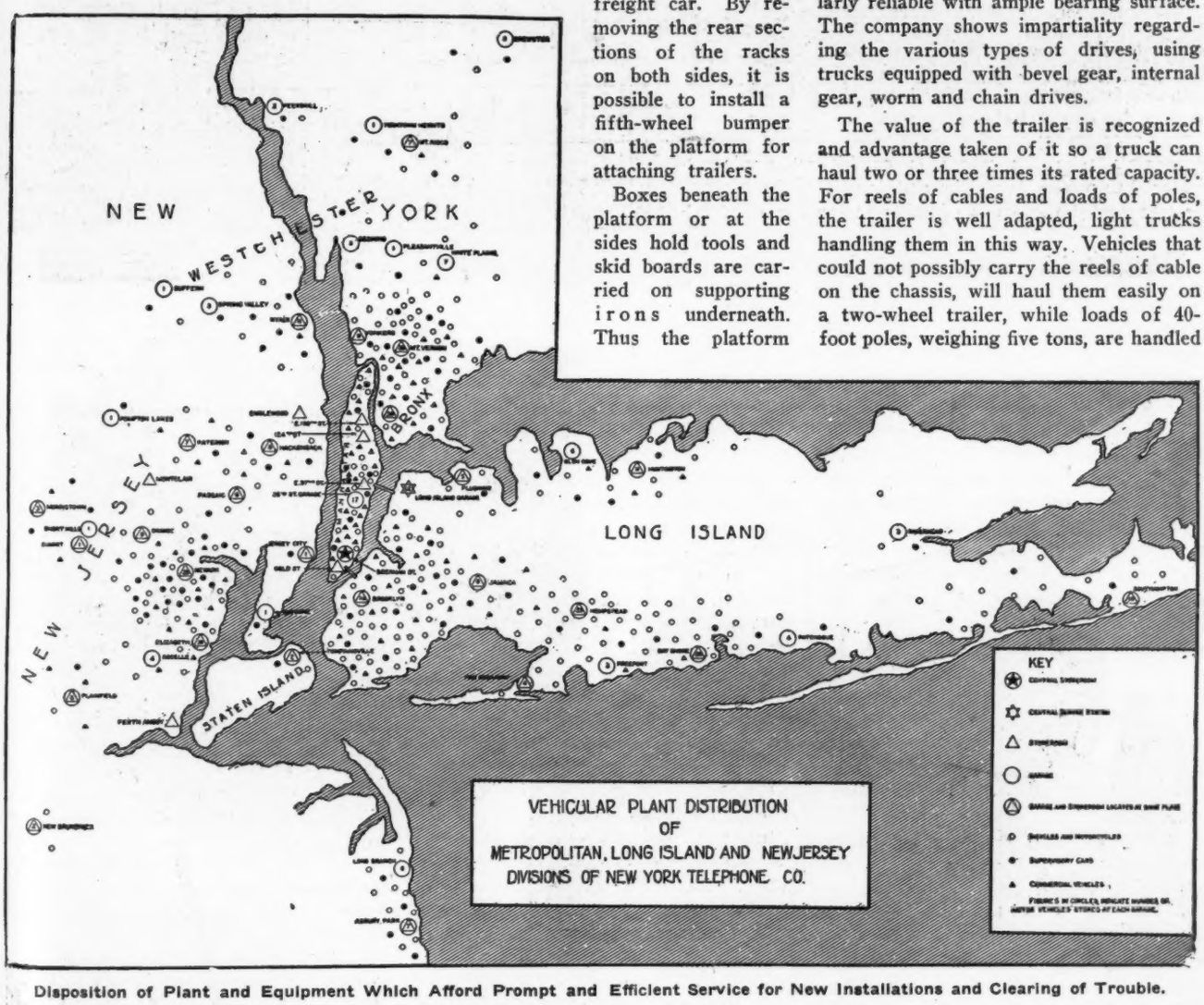
Among the medium-weight trucks, demanded as a rule, but power and capacity are of prime importance. They are used for hauling cable, poles and other bulky and heavy material in large lots. The bodies are of the open platform type, with tarpaulin top, which is spread only when weather conditions require it.

To keep the floor clear, tools are carried in brackets attached to side racks. The racks are in four sections, two on each side and are removable, so that the trucks may be loaded from the side. This is often desirable, as it is not always possible to back up to the door of a freight car. By removing the rear sections of the racks on both sides, it is possible to install a fifth-wheel bumper on the platform for attaching trailers.

Boxes beneath the platform or at the sides hold tools and skid boards are carried on supporting irons underneath. Thus the platform creases the efficiency of the driver, as it reduces the vibration of the steering wheel and makes for easy handling of the machine, thereby lessening the danger of accidents. More weight on the rear axle makes better traction, and also saves the front springs and tires, so in selecting trucks this company considers the chassis design with this point in view.

Other points that receive consideration are frame flexibility, lessening the shocks on rough roads. Pressed steel frames are preferred to solid channel construction for this reason. Brakes must be particularly reliable with ample bearing surface. The company shows impartiality regarding the various types of drives, using trucks equipped with bevel gear, internal gear, worm and chain drives.

The value of the trailer is recognized and advantage taken of it so a truck can haul two or three times its rated capacity. For reels of cables and loads of poles, the trailer is well adapted, light trucks handling them in this way. Vehicles that could not possibly carry the reels of cable on the chassis, will haul them easily on a two-wheel trailer, while loads of 40-foot poles, weighing five tons, are handled



Disposition of Plant and Equipment Which Afford Prompt and Efficient Service for New Installations and Clearing of Trouble.

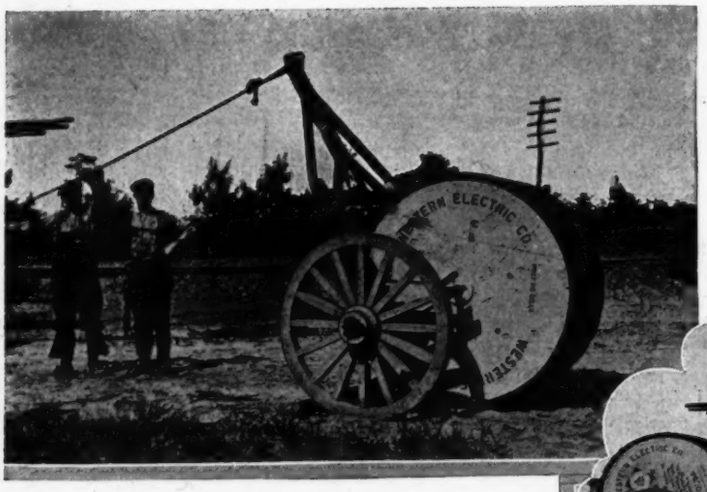
ranging from one to two tons, are 33 Macks, 13 Pierce-Arrow two-ton trucks and seven other makes, a total of 53.

In the heavy trucks with their trailers, power winches and other special appliances, the telephone people have exercised ingenuity to develop machines to serve their particular needs. Six are Mack 6,000-lb. trucks, while the rest are 10,000-lb. cars, ten Pierce-Arrows, two Mercedes and one Hewitt.

Economical transportation is the chief requirement for the heavy weights. Speed is secondary and great mileage is not space is left available for transporting gangs of laborers and bulky material. The floor space on the 4,000-lb. trucks is 10½ ft. long and from 43 ins. to 6½ ft. wide, governed by the dimensions of the chassis. The 10,000-lb. trucks have a clear floor space of 13x6½ ft., accommodating two reels of cable side by side.

Importance is attached to the balancing of the load in the heavy duty trucks. The rear axle should carry the greater part of the weight or as high as 85 per cent. This adds to the life of the car and in- by medium-weight trucks when the trailer is used. Most of the company's trucks have shackles in the rear for attaching trailers.

The power winch is considered an essential on the heavy trucks and forms part of the equipment of all of them. Each is driven by the power plant of the truck and controlled by the chauffeur without other assistance. Its flexibility allows for raising and lowering heavy loads at various speeds and for holding such loads suspended. The drum is controlled through friction clutches. For

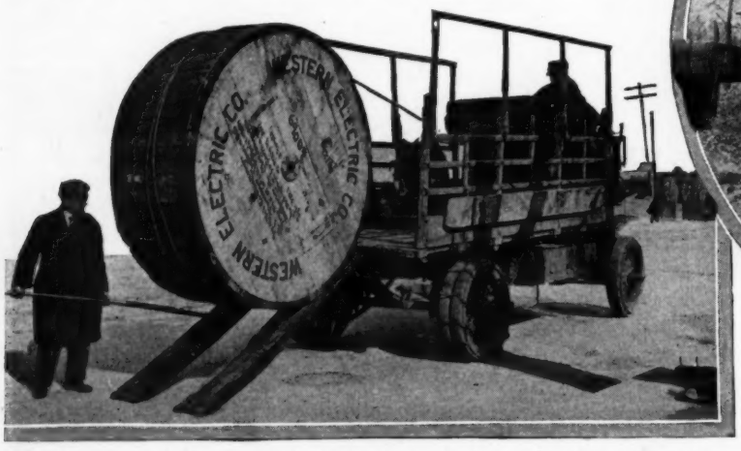


Easy Means of Loading Reel onto Tractor.

economy's sake the winch is of highest grade material to reduce its weight, as this dead load must be transported thousands of miles in the life of a truck.

The winch is useful not only in telephone work, but enables a truck to pull itself out of ruts and mudholes and act as its own wrecking truck when stalled by bad weather and poor roads. With a thousand feet of steel cable and a couple of tackle blocks, it is able to pull itself out of difficult situations.

As ordinarily applied the winch serves, in connection with pole work, for pulling cables, aerial and subway, and loading and unloading reels weighing from two to five tons each. The winch transmission is available also for operating hydraulic jacks to remove poles, for running a boring machine to dig holes for poles

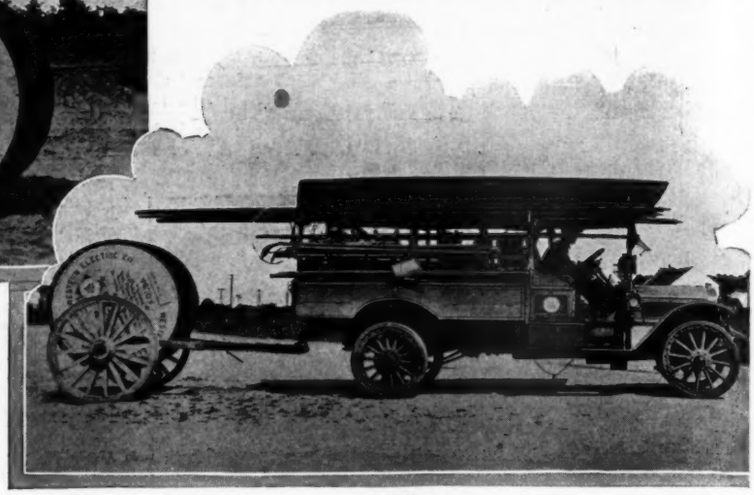


Loading and Unloading Reels Is Entirely Under Control of the Driver.

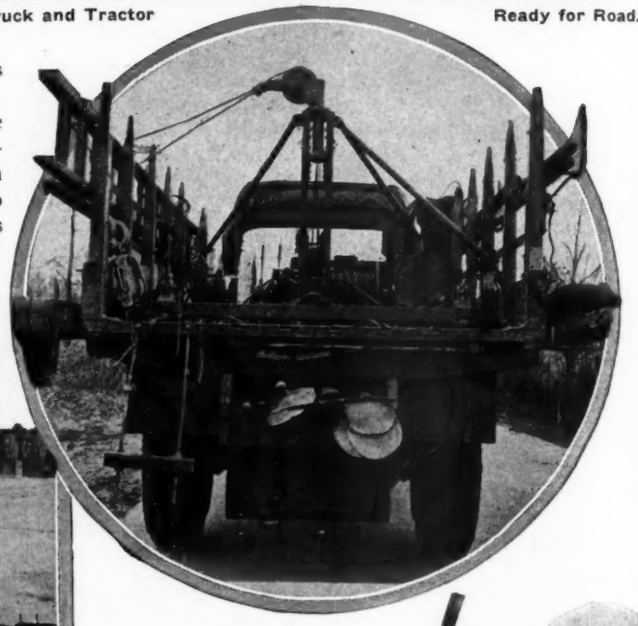
and for operating pumps to drain manholes, and the company is considering the application of some of these devices.

For setting, removing, resetting at different levels or shifting poles with all attachments, the power winch has demonstrated its efficiency, speed and economy. For pulling aerial cables, the higher winch speed is used, and a single pull of 2,000 ft. is made with a speed of 175 to 200 ft. a minute. The pulling of subway cables requires greater pulling power, and speed is not essential or even desirable. The lower speed of the winch may have to overcome a resistance as high as 12,000 lbs., though the average pull is from 2,000 to 4,000 lbs.

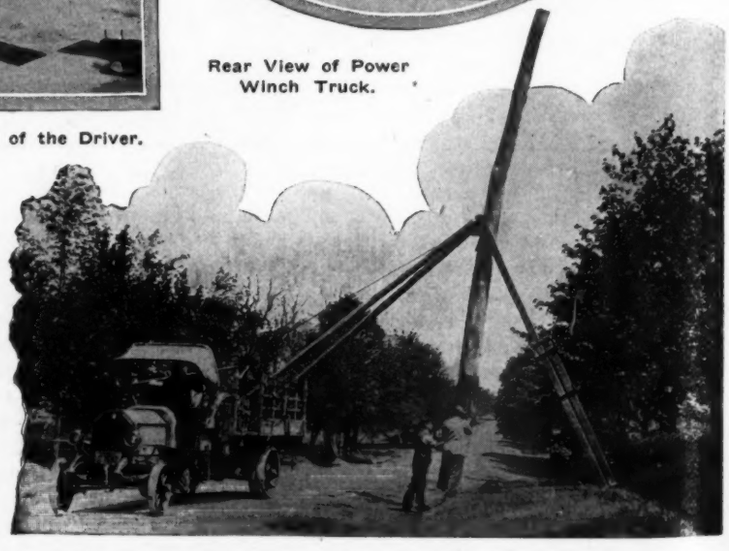
Two of the company's heavy trucks are equipped for pole work with special winches with three drums, two of which are fitted with contracting-band-type brakes and cone friction clutches and carry ⅜-in. steel rope, one 150 ft. and the other 2,000 ft. of cable. The third drum revolves with the main winch shaft, but is not controlled by the winch or brake. It carries a detachable outside flange, permitting the removal of coils of rope or wire that may be wound upon it during the construction work.



Loaded Truck and Tractor Ready for Road.



Rear View of Power Winch Truck.



The Power Winch Doing the Heavy Work in Raising a Pole.

The other trucks carry a similar winch, except that only one wire rope drum is used with about 2,000 ft. capacity. The winch transmissions have two speeds, forward and one reverse, and must have a pull of 5,000 lbs. at a 6-in. drum radius at a speed of 60 ft. per minute. To provide for the extra strain in starting heavy loads, a safety factor of 1.8 is required.

The inspection, repair and housing of the New York Telephone Co.'s trucks and passenger vehicles is a big undertaking in itself. The metropolitan area is divided in three sections, each in charge of an automobile inspector, whose duty is to examine each truck in his division at least once in every 30 days. He makes small adjustments, keeps the drivers up to a standard of efficiency and carefulness, and reports conditions to the supervisor of motor vehicles.

Such repairs as can be handled outside are known as field work and are assigned to men who go out from the central repair shop. They replace carburetors, magnetos, broken knuckles, springs, axles and wheels, while for more extensive work the truck is ordered to the shop by the inspector. To the latter is also assigned the duty of accompanying a new truck until the driver is capable of doing the work.

General inspection of the car takes place after it has been in service a year. After the first 20,000 miles have been run, the truck receives a general overhauling and such repairs and replacements as are needed. Thereafter it receives similar treatment at stated periods. The magnitude of this department's task may be inferred from the accompanying table.

In addition to this, there are seven touring cars, 218 runabouts and 232 Indian motocycles to be repaired, inspected and housed.

Garages for the shelter, cleaning and repair of the cars are scattered over the entire area to minimize "dead mileage." In addition to the main service stations at Long Island City, there are numerous repair substations in Manhattan, Brooklyn, Newark and Mount Vernon.

To avoid loss of time for the machines, all the maintenance repair work at the substations is done at night, the driver handing in a report to the garage mechanics of any trouble that needs attention, so that the following morning the machine may be ready for duty. The Long Island City main service station handles the most extensive repairs and carries in stock all the spare parts, units and equipment needed to supply the cars housed in the numerous substations.

This brief resume of the activities of the transportation department was compiled from facts supplied by the company's engineers. Besides giving some valuable practical information it indicates the extent to which the commercial car enters into the life of a modern corporation. It is impossible to conceive of these operations being carried on so smoothly, efficiently and economically with horse-drawn vehicles. Also it should be remembered that in stormy weather, when telephone lines go down, it would be impossible for the horse to do the work. The drifted snow, the sleet and the icy pavements that put the horse out of service, or seriously impede his efforts, offer comparatively few and slight obstacles to the power vehicle. So we might say that the excellent service rendered by the telephone company would be impossible to maintain without the commercial car.

Samples of the Large Loads of All Kinds of Equipment Carried by the Heavier Trucks.

Make.	Number in service.	Rated load capacity, lbs.	Average monthly mileage.	Average radius of operation, miles.	Cost per mile, gas, oil, tires, repairs.
Ford	15	750	1,053	8	$.073
Vim	10	1,000	961	8	.065
International	3	1,500	779	12	.076
Maccar	2	1,500	1,015	9	.119
Stewart	23	1,500	1,009	20	.068
White	7	1,500			
Chase	3	2,000	515	7	
International	3	2,000	554	20	
Mack	9	2,000	710	12	.132
Autocar	1	3,000	713	10	.078
Mack	24	3,000 and 4,000	725	15	.136
Pierce-Arrow	12	4,000		15	
Mack	6	6,000	648	10	.274
Hewitt	1	10,000	604	7	.308
Mercedes	2	10,000	411	15	.112
Pierce-Arrow	10	10,000	1,027	20	.128

Telephone Company's Motor Vehicle Data.

Quick Wit of Chief Operator Saves Life of Woman.

The quick wit and prompt action of Miss Margaret Carney, chief operator at the Kedzie exchange of the Chicago Telephone Co., Chicago, Ill., is said to have saved the life of Mrs. Amelia Foster recently. A woman called in at the Kedzie exchange. Her voice was so weak that she could not make the number she wanted heard. She was desperately ill, she managed to convey. The call was snapped up to Miss Carney.

"Get —— 303!" came in a gasp.

"What exchange?" asked Miss Carney. There was no answer. Then Miss Carney heard a thud. She located the address from which the call had come and summoned a neighbor.

"A Mrs. Amelia Oster has fainted at 26 South Kedzie avenue," she said. "Get a doctor to her!"

"But how do you know——?"

"Don't ask questions. Hop to it!" said Miss Carney.

Then she got after the mysterious "303" number. She called exchange after exchange and got that number. Finally she located the right exchange, and Mrs. Oster's son. She told him his mother was sick.

At that instant the neighbor cut in with a report that the door of Mrs. Oster's flat was locked. Miss Carney conveyed this to Mr. Oster.

"Tell her," said he, "to get a doctor, go up the fire escape, and break a window!"

These instructions were obeyed. When Mr. Oster reached home he found the physician by his mother's side.

"If there had been a few minutes more delay in getting her help she would have died," said the physician.

On the next day, Mr. Oster looked up Miss Carney and gave her a check for $25 in appreciation of her work.

Passing March

The World in Trouble—Darkest Before Dawn

By J. C. Kelsey

It is darkest before dawn. Just how true the statement is, and who is responsible for it, no one can say.

It is a fact that the invalid is nearer death's door at the moment before dawn than he is at any other moment during the day. If he has vitality enough to slip over the short interval, he has 24 hours' chance to regain sufficient vitality to live many years more.

The rain seems to fall the hardest just before it stops, and the whirling flood begins to subside just as men grow faint from frantic exertion on levees and protecting walls. Indians, surrounding the beleaguered fort, seemed to howl the loudest just before the dust of the ressuers was seen in the distance.

The weather gets unbearably hot and crops begin to wilt before the welcome rain comes. Nature seems to be unable, just as are men, to avoid extremes.

The Indians on the reservation gorge themselves while the food lasts, and go hungry until the next allotment of grub comes. The factory will work 24 hours a day until every employe is a nervous wreck from protracted strain. Orders flow in which must be filled at once; new additions are built, or new quarters rented, and it seems as if there is enough work to last forever.

Somewhere a bank crashes, others follow, stocks go down quickly, stock exchanges languish, the sale of bonds stops, loans are called, orders are cancelled, and activity in a twinkling of an eye changes to torpidity.

The world is at peace for many years. In the meantime, grudges accumulate, men are drilled, ships are built—and in a twinkling of an eye, war comes. It is usually more peaceful just before a war, because men at this stage are in just the same condition as children planning a surprise party.

After war has been carried on a few years, the blood of men begins to cool and one side begins to feel its wounds more than the other. Then comes the work of changing back to peace. But the vanquished one conceals his sores, fights on more bitterly than ever before—and out of it comes a sudden declaration of peace, just as surprising as the original war.

Today the world is in the dark. It seems dark enough to suspect that somewhere close lies the dawn. And it seems in the fever of the times that the world is doomed to ruin or total destruction. But that is not Nature's way.

Just as the fire begins to slacken and the flood begins to subside at the critical time, so will the difficulties, after things seem to be getting beyond human control. We may expect peace long before the ruin of the world even begins to be felt.

Sometimes we think the telephone business is on the way to some grave trouble. Each and every man has some vague misgivings regarding it. The Independent telephone is disturbed over the seeming effort on the part of Bell interests to dominate the telephone business.

The Bell man is disturbed and talks in his sleep about the seeming effort on the part of some public men to take over the telephone business. No man, whether operator, manufacturer, or publisher, can rid his mind of some specter of disaster somewhere.

When the teamster saw the locomotive, he became excited over the utter ruin of the teaming business. There would be no more horses or wagons, he thought. Yet after this time, the Studebakers, Bains, and other wagon makers made millions out of the business. There is more need of horses and wagons today than ever before.

And history is repeating itself after nearly 100 years. The teamster looks at the automobile and thinks of the time when horses and wagons will disappear.

It is safe to say that someone will be worrying over the displacement of horses and wagons in another century of time. It is safe to say that many eras of unusual activities and so-called prosperity will be followed by so many depressions and panics.

Men will work unceasingly for a time, only to have a relative amount of leisure. Just like the Indian on the reservation, he will be a glutton a part of the time, and a hungry man the rest of the time. It is Nature's way, and men cannot improve upon Nature.

The telephone business has had a peculiar history. It has been marked by acts of cruelty, of war, and of unusual strife. Men flocked to a business that had been held back by patent laws, which, true to Nature, had not been built up quietly and leisurely.

Naturally, a period of depressing influence upon telephone development was followed by a gigantic wave of activity. After several years of warfare, it dawned upon the original interests that their real safety lay in development. Hence, the telephone business was suddenly thrust into a period of double development, a race between two great competing forces.

At this time it was a great sentimental battle. Men came to conventions and talked heroically of the death of their competitors. They waved flags and cried in their vehemence that the wrongs of the human race were being righted—by the punishment of the so-called Octopus.

A man who had an acquaintance with a Bell man was known as a spy, and if any banker had married a cousin or sister of some minor Bell official, he was thrown out into outer darkness. Those few years were very turbulent.

Naturally, there followed a period when men began to get acquainted with each other. Independents met Bell men, and each found a trace of human tendency in the other. By and by the Independent took a Bell line on his board, and began to be seen in the other's company.

Soon men began to talk peace just as they did at The Hague, and began to get careless, neglecting preparedness and other natural safeguards. It looked as if the lion and the lamb were going to live in peace ever after.

At this period, another factor entered the telephone business which caused, after a time, a rebound. That factor was the Western Electric Co., which during the era of good feeling had been busy introducing its once-forbidden wares to Independent telephone men.

It is safe to say that if this factor had not been thrust into our telephone lives, there would have been a definite peace and understanding in the telephone business today.

It began slowly to dawn upon telephone men that, while they seemed at peace, there was a deadly submarine campaign on foot. It culminated in what might be called the Kingsbury-letter period.

The Western Electric Co., by reason of economic conditions, which no human being could foresee, was compelled to withdraw from the Independent field. It became swamped with business of its own associate necessities, and has reached out for help even among its old enemies.

What a pity this could not have been foreseen, and all the destruction and

ruin avoided of so many telephone manufacturers—every one of which is actually needed today to supply the demand.

We can point to 20 advertisers still selling to Independents, who have forsaken TELEPHONY because it has consistently fought the economic blunder which ordered this great factory into the Independent telephone field. It was one great mistake, yet upon great mistakes great constructive things can be built.

The great quarrel which foolishly exists between Bell and Independent telephone interests has very shallow roots. The manufacturing situation was one great irritant, and one which no Bell official was every really satisfied with.

Yet that situation is at least potentially removed, and whatever differences which survive can be remedied without damage to either party. Enough experience has been accumulated by all concerned to easily settle a problem which has vexed us all, and threatened us with ruin.

Another difference is the problem of the purchase of non-competing plants. The Bell company has purchased many plants which cannot be called by any other name than charity. They have purchased plants which had been better unpurchased because the magic of the missing local influence could not be purchased too.

If there was a way of submitting such purchases to a board with analytical powers, the irritation of this condition would soon be missing. If proper analysis could be made of local conditions, financial hardship, possible encouragement and other factors, the chances are that the Bell interests would prefer to encourage the local management.

By encouragement, money is not meant, because the mere cessation of hostilities will produce the necessary financial help.

The question of competing properties is no more difficult. If it becomes desirable to merge, such merger conditions could be submitted to analysis and arbitration. There is in every community a great opportunity to make economic adjustments and take care of every investor.

Neither Bell nor Independent can afford to carry into any adjustment all the accumulated spites and hatreds of the hot competitive days. Each must give and take, even as his measure of success. The business needs the germ of success. No failure should be perpetuated.

The telephone business is a good business. It stands as a rock in all times. Its assets are not in its physical property. Its real assets are incorporated in its subscription list—that part of the public which makes actual use of the telephone service. In fact, there is no other asset but the person who uses the telephone, appreciates it, and pays willingly for it.

Subscription lists are different. Some have Independent leanings and some have Bell. Some cities are hopelessly wedded to Bell service, while others take to Independent service equally earnestly.

Some cities should be served by the Independent. There are other cities where Independent management would strike rocks quickly. It is just such things that should be carefully studied before mergers or adjustments take place.

As said before, it is darkest before dawn. It is more peaceful before war, and more warlike before peace. It surely seems as if we have reached the stage where old animosities should be forgotten, and new deals made which will give every successful and deserving telephone man a chance to work out his salvation on strictly economic lines.

MORAL: Unfair conditions are never permanent.

Meeting of Board of Directors of U. S. Association.

A meeting of the board of directors of the United States Independent Telephone Association was held in Chicago on Friday, March 2.

Routine business was transacted, including the setting of the date and place of the annual convention next December.

Those who were present at the meeting were:

E. B. Fisher, Grand Rapids, Mich.; C. Y. McVey, Cleveland, Ohio; F. B. MacKinnon, Washington, D. C.; W. F. Goodrich, La Crosse, Wis.; J. B. Earle, Waco, Texas.; E. D. Glandon, Pittsfield, Ill.; W. H. Bryant, Mobile, Ala.; G. R. Fuller, Rochester, N. Y.; E. D. Schade, Johnstown, Pa.; Terry W. Allen, Jackson, Tenn.; Hart F. Farwell, Terre Haute, Ind.; H. L. Beyer, Grinnell, Ia.; H. D. Critchfield, Chicago; F. H. Woods, Lincoln, Nebr.; H. L. Gary, Kansas City, Mo.; G. W. Robinson, St. Paul, Minn.; H. Linton Reber, St. Louis, Mo.; W. Roy McCanne, Rochester, N. Y., and W. S. Vivian, Chicago.

Vice-President MacKinnon reported that he had been invited by Judge Stephen A. Foster, of Chicago, to indorse the position that the Central Union Telephone Co. is Independent and that it should be permitted to take over the Decatur, Ill., plant. Mr. MacKinnon stated that he not only declined to give such indorsement, but also represented to the Department of Justice that the Central Union is a Bell company and should not be allowed to take over the Decatur property. Mr. MacKinnon's action was approved by the board.

The report that the valuation committee of the Interstate Commerce Commission is about to take up the valuation of telephone properties resulted in the appointment of a valuation committee. This committee consists of H. Linton Reber, of St. Louis, Mo.; A. F. Adams, of Kansas City, Mo.; L. E. Hurtz, of Lincoln, Nebr.; G. W. Robinson, of St. Paul, Minn., and C. Y. McVey, of Cleveland.

Thirty-three applications for membership were reported by Secretary Vivian.

A discussion relative to the holding of the next convention resulted in the selection of Tuesday, Wednesday, Thursday and Friday, December 11, 12, 13 and 14. The meeting will be held at the Hotel LaSalle, Chicago.

Recent Work of the Forest Products Laboratory.

Progress that is of great importance to the future of our forest resources was made in the investigations of the Forest Products Laboratory at Madison, Wis., last year. The laboratory is maintained by the Forest Service, United States Department of Agriculture, in co-operation with the University of Wisconsin.

New by-products have been developed which will increase the amount of valuable material taken from the forest and thus give a higher return on the stumpage cost. Methods of manufacture especially have been improved, and the improvement has made possible the reduction of operating costs and the turning out of a greater quantity and better quality of product.

More definite knowledge of the properties of wood has in several instances helped to bring about the same result. The most important general lines of investigation are concerned with lumber, pulp and paper, chemical products derived from wood, and the preservative treatment of wood.

Analytical work on coal tar and water-gas tar creosotes has shown that these two wood preservatives can not be fully identified by physical and chemical means, particularly if they have been modified by the addition of tar acids and tar bases. It may, therefore, be advisable to disregard the source of the oil in framing specifications.

Seven hundred and fifty petri-dish tests covering 66 different preservatives were completed. It was found that beechwood creosote was extremely toxic to wood-destroying fungi, certain of the fractions killing fungus at concentrations of from 0.075 to 0.3 per cent. Studies on the toxicity of constituents from coal tar and water-gas-tar creosotes showed the possibility of giving water-gas-tar creosote a toxicity fully equal to that of coal-tar products.

A number of lumber companies are now experimenting with sodium fluoride in large quantities as a sap stain preventative. One mining company is using it for the preservation of its mine timbers, and a railroad company treating over a million ties per year is seriously considering its use in place of zinc chloride. These activities are due directly to the laboratory's studies of this chemical.

Physical Connection in Oregon

Oregon Public Service Commission Orders Physical Connection and Interchange of Traffic Between Bell and Mutual Companies at Tillamook—Applies Only to Messages from or to Stations on Rural Lines of Mutual Company

On February 26 the Oregon Public Service Commission, in the case of the Tillamook County Mutual Telephone Co. vs. the Pacific Telephone & Telegraph Co., ordered interchange of traffic between the lines of the companies at Tillamook. The order, however, applies only to messages originating at, or destined to, stations upon the line of the Mutual company outside the corporate limits of Tillamook.

Complaint of Mutual Company.

The action was brought by the Tillamook County Mutual Telephone Co., which alleged that the service of the Pacific company was insufficient and inadequate, and that its practices are unreasonable and unjustly discriminatory in that it fails and refuses to permit the installation of a physical connection between its telephone system and that of the Mutual company, and to allow the interchange of traffic thereover.

The Mutual company owns and operates a system in Tillamook county, consisting of a number of rural lines which are connected to and operated as part of an exchange plant. The company is a public utility as defined by the Oregon law.

The Pacific Telephone & Telegraph Co. owns and operates an exchange in Tillamook with various rural lines connected to it and a toll line extending to Portland and other points on the Pacific Coast.

Although the complaint covered the question of interchange of both local and long distance business, the plaintiff announced at the hearing in January that a connection for interchange of long distance service only was sought and the testimony introduced was confined to that feature.

The Mutual company contended that there is a general demand by its patrons for long distance service, many of whom by reason of the location of the Pacific company's lines and public pay stations and the rules and regulations established by that company with reference to line extensions, cannot reasonably secure the service of the Pacific company; and that this demand is actuated by urgent need and is such as to constitute the necessary public necessity and convenience to warrant ordering of physical connection between the two companies.

The Pacific company challenged the constitutionality of the section of the Oregon law under which the proceeding was brought. The commission did not attempt to pass upon that question, deeming it outside of its province.

The defendant contended that it adequately serves, or is in position to serve, the district under consideration; that its service is available under reasonable terms to all who desire it; that it is in active competition with the plaintiff and that to compel the connection and force the interchange of toll messages would deprive it of the most effective weapon it has to meet the competition which exists, and would inevitably result in the loss of its subscribers and the destruction of its property to its irreparable injury and in violation of its constitutional rights.

The record showed that there are numerous patrons of the Mutual company in the rural district surrounding Tillamook who are not located contiguous to the lines of the Pacific company and are not subscribers to its service, and that they have urgent need for long distance service. These people are located at distances varying from a few hundred feet up to several miles, from the nearest Pacific company line.

Under the present conditions, if they desire long distance service, it is necessary for them to travel these varying distances to avail themselves thereof, or, as suggested by the Pacific company, to install the service of that company. The general practice has been to travel the distance rather than to install the service. Nor is this travel limited to the distance to the nearest Pacific company subscriber's telephone, but, on the contrary, they travel, in most instances, to the nearest public pay station maintained by that company.

Although a neighbor may be a subscriber to the Pacific company's service, in a large number of cases the party desiring the long distance service will go to a public pay station to avail himself thereof. This is due to a large extent to the natural hesitancy in invading the privacy of another's home to transact business in which the owner of the home has no interest, and is a condition fostered by the Pacific company by its strong discouragement of the use of private residence and business telephones by outside parties.

A study of the record regarding the suggestion that the party wishing long distance service should subscribe to the Pacific company's system, develops the following facts:

The Pacific company has inaugurated a general rule relating to the building of extensions which, briefly stated, is as follows:

General Rule of Pacific Company.

The company will extend a line, without expense to the subscriber, to any point, the construction of the line to which will not entail an expenditure in excess of two years' receipts from the service furnished by that line. Beyond such point the subscriber must participate in the cost of construction.

This rule is varied in individual instances by the particular conditions regarding prospective development of additional business, etc., found to exist. The average cost of ordinary, farmer-line construction by the Pacific company in Tillamook county is in the neighborhood of $140 a mile. The regular published tariff rate of the Pacific company for farmer line, party service, in this territory is $1.50 per month.

These facts, taken in connection with others disclosed by the record as to the ability of the subscriber to pay and the amount of use he has for the Pacific company's service, lead the commission to the conclusion that the cost to many of the citizens of Tillamook county, now served by the Mutual company, of obtaining the service off the Pacific company in their homes is more than the value of such service to them.

The commission stated its belief that the contention of the Pacific company that it is in a position to furnish its service to all who may require it in that territory at a reasonable cost to the patron had not been sustained.

The Need for Connection.

Reaching this conclusion, the next question considered by the commission was: Is the need for long distance service by the patrons of the Mutual company, who cannot reasonably secure the service of the Pacific company, such as to constitute a public necessity or convenience sufficient, in view of the record before it, to warrant the commission in ordering the physical connection and the interchange of long distance traffic thereover.

The commission believed it is. The record shows these telephone users, who are deprived of long distance connection unless they submit to great inconvenience, or unwarranted expense, have urgent need for this service in their homes, especially in case of sickness or death.

Under the present system, the use of

the Pacific company's toll facilities by these people is extremely unsatisfactory. There is testimony in the record showing that parties after traveling long distances to the pay stations to place or receive toll calls have, at times, been unable to communicate with the called or calling party. This has resulted in the call being abandoned, or an additional trip being made by the patron to secure the desired service.

Parties engaged in business pursuits are among the Mutual company's subscribers who cannot reasonably avail themselves of the Pacific company's service, and their need for long distance service, at times, is imperative. As an illustration, the owner of a saw mill testified he was located 2½ miles from the nearest line, and 5½ miles from the nearest public pay station, of the Pacific company, and that in case of failure of any of his machinery, it becomes necessary for him to immediately get into communication with Portland, which is the nearest point at which new parts can be obtained.

The record is replete with testimony showing public necessity and convenience which, the commission thinks fully justifies the installation and operation of a physical connection between the two companies for the transmission of long distance messages to and from the subscribers of the Mutual company located without the city limits of Tillamook.

Within the corporate limits of the city, in the opinion of the commission, the long distance service of the Pacific company is now reasonably available.

Connection Terms and Conditions.

The only remaining question related to the terms and conditions under which this connection shall be installed and used. The Mutual company contended the connection should be made under practically the same terms and conditions exacted and allowed by the Pacific company where voluntary connections are made by it with other companies. It suggested that it should be allowed 25 per cent. of the receipts from all toll business originated by it as compensation for the collection of bills and other incidental service in connection with this interchanged traffic.

On the other hand, the Pacific company submitted that if the connection is to be installed at all, a differential in its favor should be established to compensate for the use of its facilities and to mitigate, as much as possible, the evil effect to its property and investment which it claims will inevitably result from the interchange of this traffic.

The commission carefully considered this phase of this proceeding. The Mutual company is an organization composed of local people and its rates, generally, are lower than those of the Pacific company. It has the larger number of subscribers in the locality under consideration, and its greatest disability as compared to the Pacific company is its lack of toll service.

It is true that it maintains a magneto system, and in most instances has grounded circuits, as against the Pacific company's common battery system with full metallic circuits. However, this grade of service seems to meet the demands, and the better grade of service maintained by the Pacific company at a greater cost, is of little practical benefit to the Pacific company in meeting the competition in this territory.

It follows with the turning over to the Mutual company of the toll facilities of the Pacific company, the Mutual company will be in position to offer its rural patrons a service broader in its scope than that of the Pacific company's, equal to the demands of its patrons in quality of service, and at a cheaper rate than that maintained by the Pacific company. Unless, the commission stated, it mistakes the business acumen of the citizens of the district, the Pacific company would experience trouble in maintaining its rural subscriber list under such a condition.

In order to protect the investment of the Pacific company, therefore, the commission believed it necessary to prescribe terms and conditions which will preserve the competitive status of the utilities after the connection has been made. Like conclusions have been reached by various other tribunals, in cases presenting situations somewhat similar to the one presented in this case, and, while the commission is aware that there are grounds for good argument to the contrary, it believes this to be the correct view here. See Rural Telephone Cos. vs. Bell Telephone Co. 12 Can. Ry. Cases, 319, IV Commission Telephone Cases, 832; Winter vs. La Crosse Telephone Co., 11 W. R. C. 748, 14-18 C. L., 952; Intertownship Telephone Co. vs. DeKalb County Telephone Co. 43 C. L. 311; Tweddle, et al. vs. Michigan State Telephone Co., et al, 32 C. L. 400.

In the light of the entire record before it, the commission finds that just and reasonable terms and conditions for the installation and use of the physical connection between these utilities are as follows:

(1) The Mutual company shall, at its own expense, install and maintain the necessary plant and equipment to connect up its system with that of the Pacific company at the latter company's exchange terminal, so as to make possible the interchange of long distance traffic between the two companies.

(2) On all calls interchanged under this order between the Mutual company and the Pacific company there shall be charged, in addition to the regular, published tariff rate, the sum of 10 cents, which 10 cents shall not be absorbed by either company but shall be collected from the subscriber or patron availing himself of the service afforded by the physical connection between these utilities.

(3) Each company shall be responsible for all tolls charged against its own subscribers or patrons, including the 10 cents differential herein provided, and shall, on or before the 10th of the month following that in which the service was rendered, remit to the other the sum of five cents for each interchanged call for which its subscribers or patrons shall be liable.

March 15, 1917, is a reasonable time for this order to become effective.

Based upon the foregoing facts, considered in connection with the entire record before it, the commission finds the present service of the Pacific Telephone & Telegraph Co. is inadequate and its facilities unreasonable; that public necessity and convenience require the use by the subscribers of the Mutual company located without the corporate limits of the city of Tillamook of the toll line facilities of the Pacific company in connection with the system of the Tillamook County Mutual Telephone Co., and that such use under the terms and conditions set forth will not result in irreparable injury to the Pacific company, or the users of its long distance facilities, and will not result in any substantial detriment to the toll service rendered, or to be rendered by it; that the revenue which will be derived from the toll business interchanged under this order is a reasonable compensation for the use of the facilities involved in this business.

Central Home Employes Study Book of Operating Rules.

The various local exchanges of the Central Home Telephone & Telegraph Co. are taking up a detailed study of the book of rules of the United States Independent Telephone Association, which has been approved and applied to its service by the Kentucky company. At a recent meeting of the operators of the Paris (Ky.) Home Telephone & Telegraph Co., four of the rules were taken up and discussed—those on "Personal Numbers," "Team Work," "Conduct and Unnecessary Conversations" and "Improper Use of Circuits."

Annual Convention of Florida Telephone Association.

Announcement has just been made that the annual meeting of the Florida Telephone Association will be held in Jacksonville, Friday, March 23. The sessions will be held in the Jacksonville Board of Trade rooms, beginning at 9:30 a. m.

An interesting program is being prepared. All those who are interested in the telephone business are cordially invited to attend.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—This Section, "Part VI, The Valuation of Telephone Properties," Written by Chas. W. McKay

Quiz Question on the Preceding Installment.

86. What does the general and legal expense include?

87. Make up an estimate of the general and legal expense which would be incurred in the construction of a property serving 50,000 to 60,000 subscribers.

88. How is the cost of engineering usually estimated? How is the supervision between the construction gang foremen and the executive staff cared for?

89. Make up an estimate of the cost of general supervision during construction for a 50,000 subscriber plant.

90. What one point should be clearly in mind in computing taxes and insurance during construction? What is the first step in the compilation of taxes, insurance and interest?

91. In making up a schedule of construction expenditures, what points must be considered?

92. How are the taxes during the construction period computed?

93. Illustrate the computation of taxes.

94. How are taxes sometimes computed? Is this method more logical than the method using a construction schedule?

CHAPTER V. Collateral Construction Costs (Continued.)

95. *Insurance Expense During Construction.*—There are three sources of insurance expense ordinarily encountered during the construction of a telephone property: Fire insurance—buildings, central office equipment, furniture and fixtures, tools and that portion of the construction material carried in the storeroom during each of the construction periods—employers' liability insurance; and insurance against injuries to the general public.

Insurance, like taxes, should be estimated on a periodic basis—the periods are usually assumed to be six months each—and the reproduction cost of plant installed less the reproduction cost of plant in service ascertained for each period and used as a basis for computing the cost of insurance.

96. *Estimation of Fire Insurance Expense.*—In estimating fire insurance, prevalent rates for similar risks, and rates paid for the several years preceding the appraisal on the property under consideration, should be reviewed in determining a fair insurance rate for appraisal purposes. It should also be remembered that insurance rates are rarely applied to the full value of the property insured.

An examination of the company's insurance records for the several years preceding the appraisal should give the ratio of insured value to book value. This ratio may be applied to the reproduction cost of the insurable property, to get a proper insurance base. An illustration of the method followed in computing fire insurance for a comparatively large telephone plant is given in Table II.

TABLE II.

Period.	Cost of buildings.	Cost of C. O. equipment.	Cost of furniture and fixtures.	Cost of tools, etc.	Totals.
First year, first half	.....	.....	$13,100	$ 1,200	$ 14,300
Second half	$ 16,073	.....	2,000	6,000	24,073
Second year, first half	30,835	$ 174,322	2,000	10,000	217,157
Second half	43,138	284,569	2,000	16,000	345,707
Third year, first half	44,531	340,514	17,750	20,000	422,795
Second half	46,532	160,824	4,893	20,000	232,249
Fourth year, first half	38,370	120,198	3,750	12,000	174,318
Second half	17,166	114,629	3,250	6,800	141,845
Fifth year, first half	.....	61,511	2,806	4,000	68,317
Second half	.....	6,799	6,533	592	13,924
Totals	$236,645	$1,263,366	$58,082	$96,592	$1,654,685

Period.	Total to date.	Put in service.	Construction in process.	One-fifth material.	Amount insured.	85 per cent valuation.	Insurance cost.
First year, first half.	$ 14,300	.....	$ 14,300	.....	$ 14,300	$ 12,155	$ 36
Second half	38,373	.....	38,373	$12,716	51,089	43,426	130
Second year, first half	255,530	.....	255,530	54,056	309,586	263,148	789
Second half	601,237	.....	601,237	71,574	672,811	571,889	1,716
Third year, first half.	1,024,032	.....	1,024,032	74,302	1,098,334	933,584	2,801
Second half	1,256,281	.....	1,256,281	87,092	1,343,373	1,141,867	3,426
Fourth year, first half.	1,430,599	$1,256,281	174,318	106,056	280,374	238,318	715
Second half	1,572,444	1,430,599	141,845	81,610	223,455	189,937	570
Fifth year, first half.	1,640,761	1,572,444	68,317	65,598	133,915	113,828	341
Second half	1,654,685	1,640,761	13,924	51,846	65,770	55,905	168

Total fire insurance during construction $10,692

Table II. Manner in Which Cost of Fire Insurance During Construction Is Calculated.

97. *Liability Insurance in the Actual Construction Work.*—Liability insurance in actual construction work is based upon the payroll of the construction forces. Hence, in computing the cost of "liability insurance during construction," we have, first, to determine the proportion of the total reproduction cost involving labor items only, and then to apportion this amount over the construction period.

A review of the unit costs for the various types of plant will render possible a reasonably accurate estimate of the ratio of labor costs to total costs. This ratio applied to the construction schedule, will give a proper base for use in determining liability insurance during each period.

The illustration which follows, is taken from a recent appraisal of a telephone property. It will be noted that liability insurance was not allowed on subscriber's station installations, as there is practically no danger of injuring life or property in installing a telephone on private property—for that matter, there is very little danger of injury to the installer himself. But the additional cost involved is comparatively small and most companies feel that it is better to be on the safe side in the matter of employes' insurance.

98. *Example of Computation of Liability Insurance.*—An illustration of the method used in computing liability insurance is given in Table III. In this table liability insurance was calculated on the basis of the working force involved in the construction of the plant, exclusive of general supervision. The rate for outside employes is $5.25 per $100 of pay roll. The rate for the general public is $2.04 per $100 of pay roll. The cost of liability insurance for employes and general public (Table III) was estimated on this basis.

Liability insurance is sometimes estimated on a flat basis, as a percentage of the labor cost of the insurable items. On this basis, an allowance of ¾ths of 1 per cent. of the estimated labor cost for employes' insurance and ¾ths of 1 per cent. for public insurance, or a total of 1½ per cent. for liability insurance, is not an unusual allowance.

99. *Interest During Construction.*—Courts and commissions are generally

agreed that the interest on the capital used in constructing a utility property is an allowable element of the total reproduction cost during the period that the capital is lying idle. As soon, however, as any portion of the plant is put into active service, interest on the capital invested in that portion of the plant ceases to be an element of cost and becomes a part of the company's operating expenses.

In the case of Pioneer Telephone & Telegraph Co. vs. Westhaven (118 Pac. 354), the Supreme Court of Oklahoma rendered the following opinion:

> The commission refused to allow it (interest during construction) because it did not consider it a proper element of reproductive value.
>
> Counsel for the commission, however, at the oral argument before this court conceded, and we think properly, that there is no ground for refusing its allowance . . . . . no case has been cited, and in our investigation we found no case involving this question, where a reasonable amount has not been considered and allowed for loss of interest during construction as part of the cost of construction.

100. *The Rate of Interest.*—The amount allowable for interest during construction will, of course, depend upon the rate at which interest is computed and upon the length of time during which the accrued interest is considered a capital rather than an operating expenditure. Rate of interest will be governed by the prevalent cost of money in the locality of the property under consideration and by the general attitude of the courts and commissions having jurisdiction over the territory involved, as evidenced by their decisions in similar cases in the past.

There is one point in this connection which should be clearly borne in mind: It sometimes happens that capital, held in readiness for use in actual construction, temporarily earns an increment during the period of inaction. As an illustration, the promoters of a property may deem it advisable to borrow in advance sufficient funds to finance several years' construction. Such action may be warranted because of anticipated future tightness in the money market, or expected advance in rates, or other pertinent reasons.

Until the money was actually required, it would probably be deposited in a business bank or with a trust company and there earn interest at a somewhat less rate than that charged by the original lenders.

In cases of this kind, only the net rate should be used in computing interest during construction. If the money costs 6 per cent. and earns 3 per cent., the difference, 3 per cent., should be used in determining the interest on the portion of the total capital earning a temporary partial return. *(To be continued.)*

Period.	Outside employes.	Substation installers.	Insurance cost.
First year, second half	$ 38,874	.....	$ 2,834
Second year, first half	110,093	.....	8,026
Second half	144,602	.....	10,541
Third year, first half	157,180	.....	11,458
Second half	150,667	47,259	13,465
Fourth year, first half	172,378	41,806	14,761
Second half	142,178	26,856	11,775
Fifth year, first half	102,947	31,408	9,154
Second half	100,178	19,128	8,307
Total liability insurance during construction			$90,321

Table III. The Method Used in Computation of Liability Insurance.

Convince the Owner Why He Should Join the Association.

By F. B. McKinnon.

It is a safe assumption that nine out of ten managers of telephone properties appreciate the advantages of belonging to a national association. Undoubtedly this proportion of the managers consider it a benefit to themselves and their companies to be members of the association. They appreciate the advantage of co-operation. They appreciate the benefit of association protection. They appreciate the service that the national association can render them in supplying information and representing them before the federal departments.

They appreciate that by belonging to the association, their companies are given a voice in the direct management of the Independent telephone industry. They undoubtedly appreciate that the association's influence is such that their companies are affected by the association's actions whether their companies belong to the association or not, and that, therefore, it is a matter of business for them to take an active part in association affairs.

If this assumption is correct, why is it that nine out of ten telephone companies are not members of the national organization? Is it not because the manager in the majority of cases does not control his own company—has no voice in the financial management of his company? Is it not possible that he has made no effort—or if an effort has been made it has been an ineffectual one—to convince the men who control the property, of the advisability and necessity of their company belonging to the association?

This it seems is a problem to which it is well worth while to give consideration. This is a question that managers should consider seriously. Are they doing their full duty to their companies when they do not convince the owners of their properties of the advantages that will come to the properties by association membership?

If they have done what they consider to be their best to interest the owners, why can they not send the names of the owners or managing directors to this association to enable the association to get in touch with these men and present to them directly the advantages of association membership?

F. B. MacKinnon.

If you, Mr. Manager, have not joined the United States Independent Telephone Association because of your inability to obtain the necessary consent from your owner or owners, why not immediately ask the association to get in touch directly with your directors? Do you not owe this to yourself as well as to your company?

Seek Interchange of Service.

Petitions asking that arrangements for interchange of service be made by the Pacific Telephone & Telegraph Co. and The Santa Monica Bay Home Telephone Co. at Santa Monica, Cal., were recently presented to both companies by the Santa Monica Merchants' Association.

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Where anchorage is difficult, Drive & Twist Anchors excel. Through pavement it is only necessary to break a small hole and then drive the anchor. This eliminates the damage to expensive pavement and eliminates much labor. In private property, the Drive & Twist Anchor is installed without a mess or damage to lawns. In close quarters, such as alongside of buildings, fences or where there is only a small strip of ground available, a secure anchorage can be obtained without difficulty.

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We extend you our liberal trial offer of shipping a dozen anchors subject to test and approval. Give them any trial you wish and if they do not prove satisfactory, your money will be cheerfully refunded. We guarantee Drive & Twist Anchors to hold more and cost less installed than any other form of anchorage. Prices are as follows:

No. 1 Drive & Twist Anchor for light guy work.... $1.20 ea.
No. 2 Drive & Twist Anchor for medium guy work.... 1.95 ea.
No. 3 Drive & Twist Anchor for heavy guy work.... 2.40 ea.

Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies—Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

New York Commission Rules on Telephone User's Manners.

According to a decision of the New York Public Service Commission, rendered last week, any subscriber of a telephone company who uses profane language over the telephone, maliciously places the receiver against the transmitter, to make a shrieking noise over the line, flashes the signal continually, or fails to answer when called, assumes the risk of having his telephone permanently removed.

The commission sustained the New York Telephone Co. in a complaint made by Morse M. Frakel, secretary of the Mediator Publishing Co., of New York. He complained that his service on two lines to the publishing company's office had been discontinued.

Two opportunities were given him to appear at a hearing. Though Mr. Frakel failed to appear, the operators and managers of the telephone company were present and presented a record extending over some two years. They showed that in addition to the irregularities mentioned above, Mr. Frakel called the operators "bums," wished that they might now and then "break a leg," and was otherwise "the author of profane language and obscene language over the telephone."

The record was in great detail, sworn to by a number of witnesses, giving days, minutes and hours upon which the alleged offenses were given. Accordingly the company is permitted to discontinue service to Mr. Frakel, or to any other subscriber who knowingly permits him habitually to use the telephone.

Status of Telephone Bills Before Nebraska Legislature.

The corporations committee of the Nebraska senate has recommended for indefinite postponement, the bill proposed by Lieutenant-Governor Howard fixing 35 cents as the maximum rate for toll messages in the state. Chairman Tanner declared it was a ridiculous bill. The lieutenant governor rallied his friends in the senate, but a motion to overrule the committee was lost by a vote of 17 to 15.

The same committee reported out for the general file, Senator Adams' bill giving cities of the second class the right to regulate the rates and service of telephone companies therein, along with other public service corporations.

Representatives of the various telephone companies joined with Warren I. Pratt, president of the Nebraska Independent Telephone Association, in urging that modern service conditions make control by a city or town, of telephone rates and service, impossible. They said that because every municipality has a zone of free service, often including some one or more adjacent towns, the plan was impracticable.

Telephone service today is not co-extensive with a town, and therefore to attempt to give the town the right of regulation, which it cannot exert outside its limits, would mean not only divided rates, but also divided authority and divided service, which merchants would not stand for. Mr. Pratt insisted that the best interests of the public lay in centering regulatory authority in one body and that the Adams' plan would deprive municipalities of outside connections they now have without charge.

It was also urged that cities, especially of the second class, less than 5,000, do not have experts at their command to make the necessary valuations and accountings. The fact that Senator Adams is a member of the committee was responsible for the favorable action on the bill, it being senatorial courtesy to so treat committee members' bills.

None of the dozen or more maximum toll rate and exchange station rentals bills have been reported out from the committees in either house, and as the session is so far advanced that the sifting committees will take charge of the general files before the bottom of them as now constituted can be reached, they have less than even chance of being considered by either body.

Frequent hearings have been held on the bills during the past week. The new arguments lined up against the maximum rate bills are that the theory of a maximum rate is wrong because there is neither uniformity of service nor of equipment, and that no two localities have exactly the same condition; that it would be discriminatory because it makes the same charge for different kinds of service; that long distance messages are rarely social in character but are largely business; that the reduction in service necessary if the price is arbitrarily reduced by the state, will wipe out most of the business because big business, the chief patron, wants first-class service or none; that lower rates will not stimulate traffic because business men now use it to the limit of their needs and desires.

Computations were submitted showing that the reduced rates, including the 35-cent maximum and proportionate reductions on short hauls, would cost the Nebraska Bell company about $150,000 in toll receipts and the Lincoln Telephone & Telegraph Co. $125,000 a year. President Pratt of the state Independent association said that it would bankrupt a number of small companies that have a total of 4,700 miles of toll lines in the state and told of several it would put immediately out of business. Objection was also lodged that the development work now in progress in the western part of the state would not only crash down about the ears of owners, but there would be no more so long as rates were cut so low.

At none of the hearings has any person assuming to know anything about rates or service, appeared, and none of the authors of the bills has presented a statement on its behalf. The one exception was when Representative Auten backed his bill requiring physical connection of two companies in the same town, with reciprocal tolls. He was met with the argument that the cheaper and least-equipped company would drive the other out of business. The failure of any presentation of the case for the bills led several of the telephone representatives to complain that it was legislation without investigation and a jump in the dark.

Nebraska Bill to Increase Commission's Investigations.

Railway Commissioner Wilson, of Nebraska, is championing a bill in the state legislature that he has succeeded in having placed on the general file. It empowers the state railway commission to employ as many investigators as it may deem necessary to run down complaints as to service of public service corporations.

The railroads are fighting the measure vigorously, their objection being that the investigators are to be paid $10 a day and expenses by the company that is being made the subject of invstigation. They claim that it will result in the payment of hundreds of thousands of dollars yearly to men with roving commissions, who will become very numerous during the primary and election campaigns of members of the commission.

Mr. Wilson told the committee that the telephone companies had entered no objections to the bill and were for it. He said that the commission was unable to make investigations and to check up on the hundreds of reports made by public

service corporations because of lack of funds. In order to secure effective regulation, it was necessary that at least five men be permanently employed to find out if the reports made were accurate copies of the actual business done and to investigate complaints where hearings developed a radical contradiction in testimony.

Commissioner Wilson pledged himself to support such rates for service as will return whatever percentage is necessary to induce capital to enter the business. He declined to fix the percentage because of the varying cost of money.

This declaration has greatly pleased the telephone men who say that the present cost of material being double former prices, and this having cut in two the amount set aside in the last few years for depreciation, will force them to file applications for increased rates during the year. Mr. Wilson was elected as an anti-corporation candidate at the last election.

"Progress Report" Rate Hearing Before California Commission.

One of the reasons that telephone rates are high in San Francisco, Cal., according to the statement of the city in the rate case now before the California Railway Commission, is that the Pacific Telephone & Telegraph Co. incurred an unnecessary duplication of plant and equipment when it absorbed the Home Telephone Co., and sought an interest return on additions not necessary to the service.

Assistant City Attorney Robert M. Searls, who appeared for the city in a hearing before Commissioner Thelen, argued that the telephone company is charging too large a proportion of its state expenses in its San Francisco rates. Mr. Searles stated that the city thus far has made only a cursory examination of the company's books.

Commissioner Thelan stated that the hearing was for "progress report" in order that the commission might know just how far the company has progressed with the task of inventory and appraisal of its properties in the state of California.

Attorney James T. Shaw for the company reported that the compilations were 70 per cent. complete and that all exchanges except San Francisco, Long Beach, San Jose, Redding and Modesto were finished, with respect to "basic studies." Nearly 100 experts are at work gathering the data. Perhaps a year will yet be necessary, said Mr. Shaw, before the work is completed.

The city of San Francisco in August, 1915, filed a complaint with the commission against the telephone company asking for reduced rates. Later the company filed a petition asking for an investigation of its rates, rules and regulations, not only in San Francisco, but throughout the state, with the claim that its system was so interrelated that injustice would be done if any part of it were considered alone.

The commission thereafter merged the city's complaint in the larger investigation, which has already been given several hearings in various parts of the state. The company in the meantime is preparing an elaborate record of its properties, which, after check by the commission's experts, will be used as a factor in subsequent rate fixing.

Ohio Cities' Right to Share of Receipts Upheld.

Reaffirming the right of Ohio cities to enter into contract-franchise agreements with telephone companies, Judge James I. Allread, of the Ohio Circuit Court of Appeals, in a decision handed down February 28, and concurred in by his associates, Judge Kunkle and Ferneding, affirmed the Franklin County Common Pleas Court in granting the city of Columbus, Ohio, judgment against the Citizens Telephone Co. for $71,373.93.

The city entered suit through City Attorney Henry Scarlett, to collect a share of the gross receipts of the telephone company under the terms of the franchise-contract under which the telephone company has been operating. The city sought to collect these so-called royalties for the years from 1905 to 1914, inclusive, which amounted to $3,800 in some years and $8,900 in others, or an aggregate of $71,373.93.

The telephone company attacked the validity of the contract feature of the franchise, upon the ground that inasmuch as the telephone company secures its rights from the state, the city gave nothing of value to the telephone company in exchange for the royalty arrangements.

The appeals courts, however, in its decision, reaffirms the right of municipalities to contract with telephone companies for part of the revenue of such companies in exchange for franchises, and also reaffirms the legal proposition that after such companies have operated for several years under such contract-franchise and have received the benefits of them, they are estopped to deny their validity.

The case will probably be appealed to the state supreme court by the telephone company.

Judge Dever Modifies His Order in Decatur Merger.

Judge William E. Dever of the Superior court in Chicago has handed down an order, on the motion of the receivers of the Central Union Telephone Co., modifying an order of November 29, 1915, permitting the sale of the Decatur Home Telephone Co. of Decatur, Ill., to the Central Union Telephone Co.

The 1915 order was entered on the petition of the receivers who submitted to the court the question of carrying out the agreement for the purchase of the Decatur plant.

The original order is modified by striking out the following paragraph:

—and the receivers are also hereby further directed, before proceeding to complete the purchase herein provided for, to notify the attorney general of the United States of the entry of this order and in case he fails to object thereto within 20 days after the service of such notice upon him, to proceed to contemplate said purchase, as herein provided for.

This means that the deal will not have to be placed before the United States attorney general for his permission.

It is further ordered that the order of November 29, 1915, shall remain in full force and effect except as modified by this order.

A similar order was entered in connection with the purchase of the plant of the Fayette County Telephone Co.

The Central Union company has already taken action and is in possession of the Decatur plant.

Hearing Resumed on New Jersey Rate Investigation.

The rate investigation of the New York Telephone Co., which is being made by the Public Utility Commission in conjunction with the rate probe of the Delaware & New Jersey Telegraph & Telephone Co., was resumed February 28, in Newark. The first witness was William C. Boyrer, analyist of the New York Public Service Commission, who has been retained by the commission to estimate the annual cost and upkeep of exchanges in the state and of certain property valuations.

Other witnesses included Lathrop Anderson, who made estimates of the physical valuations of buildings in Newark, and Professor Mankey, of the University of Pennsylvania, who testified as to exchange and other building equipment.

The opening testimony was highly technical, dealing with the physical value of properties in the state together with their interlocking service valuation, when compared as part of the general system.

Nebraska Commission Allows Rate Increase in Peculiar Case.

The Newport Telephone Co., at Newport, Neb., has been sold by O. Nelson to Bert Bogue. It is a small company serving 52 subscribers in Newport and switching with 55 farm telephones. It was purchased in July, 1911, by O. Nelson from the Newport, Hammond & Southern Telephone Co., by his assuming a debt of $443 and agreeing to maintain the existing rates for five years. As soon as his contract ran out, he applied for permission to increase his rates

from $1.25 to $1.75 a month and to double the 25-cent switching rate.

Several residents journeyed the 350 miles to Lincoln to protest. Nelson refused to appear, but sent a statement of the 1916 business. This showed revenues of $1,085 and expenses, included a manager's salary of $730, totaling $1,494. While the commission had the matter under consideration, one of the protestants wrote that Nelson, who is an elderly man, had sold out. It was stated that as the purchaser was a young man who could do the work himself, he need hire no manager, and therefore the request to increase rates should be denied.

Commissioner Taylor, who heard the case, expressed his puzzlement in his order. He said that the district was so sparsely settled that a rate which would give earnings sufficient to pay operating expenses, maintenance and dividends would be prohibitive. He allowed an increase of 25 cents on residence telephones and 50 cents on business telephones. After denying an increase on the switching charge, he made a supplemental order, making it 40 cents instead of 25. This will enable Mr. Bogue to just break even, it is claimed. He was ordered to give continuous service week days, patrons having protested against closing of the exchange at the lunch and supper hour.

Unusual Case of Consolidation Protest in Nebraska.

The protest of the minority stockholders of the Monroe Telephone Co. against the consolidation of the exchange with the exchange of the Albion Telephone Co., at Albion, Neb., was submitted February 24 to the Nebraska State Railway Commission.

The situation is unusual. The Monroe company started as a purely farmers' mutual a number of years ago, each subscriber being required to take out a share of stock, with which his equipment was purchased and his own aid in building to him was commandeered. Rates remained at a dollar a month or less for a number of years, with the company paying dividends ranging from 7 to 11 per cent.

Alfred Bratt, a wealthy real estate owner and banker of Genoa, became interested and has financed a number of its later operations, which included the purchase of a number of exchanges at different points, until the book value of the plant reached $85,000. Mr. Bratt as president has taken running the company as his recreation. He devoted days to its work and business, charging nothing for his services and furnishing automobiles and other services that never showed up in the expense account. The secretary was paid but a nominal sum, and expenses were kept to the minimum.

When later the question of rates at one of the exchanges came up, the Nebraska commission found the records were so incomplete that it was impossible to determine costs of construction or expenses. The company's receipts, however, had been more than their expenses and it had been keeping up dividends, more than a third of the value of the property being represented by expenditures from the surplus. Its 2,000 telephones brought in a gross of $20,000 and its operating expenses were about $14,000.

Some months ago Mr. Bratt, who had been picking up stock wherever he could find it, associated some others with him and purchased the Albion exchange, which has about 1,000 telephones in the city and outside, and paid therefore $55,000. His plan was to consolidate the exchange with that of the Monroe company in Albion. The commisison was asked to authorize the issuance of $55,000 stock of the Monroe company, which more than doubles its stock issue.

Minority stock interests objected to a consolidation, and asked the commission, it it authorized the consolidation, to reduce the stock issue to $40,000. They contended that was the most the plant of the Albion company was worth and that $55,000 was a fictitious value. The records of the Monroe company were such that C. J. Garlow, president of the Nebraska Independent Telephone Association, was called into the case, and he has succeeded in straightening matters out so that the case was finally submitted.

Indiana House Movers Restrained by Telephone Company.

J. T. Merryman, for the Citizens Telephone Co., of Decatur, Ind., filed suit against Fred Reppert, Roy Runyon and James Harmon last month. The plaintiff sets out that it has a telephone line from Decatur to Monroeville; that the defendants, who are moving a house along said line, have already cut cross arms on the line and threaten to further damage said line.

A restraining order was asked and granted, preventing the defendants from further molesting, removing, or interfering in any way with said telephone line until a hearing is held.

Western Illinois Company to Sell to Macomb Company.

The reorganization committee of the Western Illinois Telephone Co. is permitted, under an order of the Illinois Public Utilities Commission, to sell the company's plant, lines and franchise in the city of Macomb, Ill., and vicinity, to the Macomb Telephone Co.

The Western Illinois company owns and operates a telephone system in McDonough and other counties in Illinois with an exchange in Macomb. It has about 230 subscribers. The Macomb Telephone Co. owns and operates a system in Macomb and vicinity with about 1,600 subscribers.

The consideration is $8,000, which price the commission believes is a fair value of the property to be purchased. The Macomb company has been given authority by the Illinois commission to issue common stock to the extent of $8,000 par value for the purpose of obtaining funds to pay for the property to be purchased.

Hearing on New Franchise of Dallas Automatic Company.

A public hearing was held before the board of city commissioners of Dallas, Texas, on the proposed franchise for the Dallas Automatic Telephone Co. last week, when the franchise came up on its second reading.

Modifications of the franchise as passed on the first reading were made by City Attorney O. F. O'Donnell, but the changes were not radical.

Thomas B. Love argued against the proposed franchise. Mr. Love's chief opposition is based on the grounds that he considers the grant merely an enabling act for the city commission to give the Southwestern Telegraph & Telephone Co. a franchise without submission to the people, and also to fix a valuation for the Southwestern company's property without a referndum.

This power on the part of the city commission is conferred under the provisions for a merger of the Southwestern company with the Automatic company, Mr. Love declared. The franchise as now worded will also result ultimately in high rates to single-line users, Mr. Love believes.

Consolidation Awaits Approval of Interstate Commission.

According to reports from Bristol, Tenn.-Va., the consolidation of the two telephone companies operating in Bristol, Johnson City, Abingdon, Jonesboro and other points in East Tennessee and Southwest Virginia now only await the formal approval of the Interstate Commerce Commission. The consolidation will be brought about by the purchase on the part of the Bristol Telephone Co., of all properties of the Southern Bell Telephone Co.

The local Independent company will then have no competition in this territory. It will connect with the toll system of the Bell company.

The consolidation will bring to a close the long and bitter war between the local Independent company and the Bell company in Bristol and that section. The fight began some 25 years ago when the local Independent company was formed. The Bristol company for a number of years had no competition at Johnson City, but about six years ago the Bell company entered that city. For several years the Bell company gave free tele-

phone service in Bristol as a result of the strenuous competition, and it is claimed that the rates received by both companies have for several years been ruinously low.

Western Nebraska Commercial Clubs Protest Legislation.

A vigorous protest was lodged with the Nebraska legislature the latter part of February by western Nebraska associated commercial clubs, against the passage of any legislation that would interfere with telephone development in that section of the state. The petition set forth the confidence of the signers that the passage of the various rate reduction bills would seriously retard the development of telephone lines everywhere, affect the service and present the installation of adequate equipment.

Believing that the extension of rural, urban and toll lines is a prime necessity in the advancement of business, the signers asked that the entire matter of rates and regulation be left with the state railway commission, where the constitution and previous legislation has placed it. Copies of the petition were also sent the governor and lieutenant governor.

Due to discovery of alkaline solutions in western Nebraska lakes, which are cheaply transformed into potash that brings large returns since German markets are closed, western Nebraska is experiencing a business boom that has been augmented by high prices for cattle, potatoes and farm products. The people are asking for the extension of telephone service and also for more direct toll connections.

Alliance and Broken Bow, the biggest booming towns in that section, are about 200 miles apart, but they have no direct wire connection. A message from the latter to the former must be sent 150 miles east, then southwest, and then directly north—about three times the air mileage.

The companies directly interested—the Nebraska Bell and the Nebraska & Wyoming—have been planning large development work that has been halted by the menace of proposed legislation.

Railroad and Station Telephones in Towns with Exchanges.

The Nebraska State Railway Commission has been called upon to decide a case with an unusual quirk to it. A Nebraska law requires railroad companies, in order to complete their service to the public, to maintain telephones in their depots.

Complaints have been lodged with the commission by residents of Crowell and Washington that the Chicago & Northwestern Railway is not obeying the law. The railroad company retorts by declaring that the law means that telephones must be maintained in the stations of towns that have telephone exchanges. Neither Washington nor Crowell have town exchanges. They are too small and are served by the Farmers Telephone Co. of Dodge County.

Wisconsin Telephone Co. Accepts Physical Connection Decision.

Acceptance of the authority of the Wisconsin Railroad Commission to regulate telephone companies in Wisconsin as to physical telephone connection, was admitted in the Dane County Circuit Court at Madison with the dismissal, by stipulation, of four suits filed by Wisconsin telephone companies to review and set aside the order of the commission regarding the Wisconsin Telephone Co. and the local companies at Janesville and La Crosse, to give physical connection service between La Crosse and Janesville.

Three of the suits were filed by the Wisconsin Telephone Co. and the other by the Rock County Telephone Co.

"This marks the acceptance by the Wisconsin Telephone Co. of the decision of the state supreme court in the La Crosse case and sustains the Wisconsin telephone physical connection law and the orders of the railroad commission made under it," said an official statement from Attorney General Owen's office. "The decision is important as it will affect all those places where there are no physical connections between the Wisconsin Telephone Co. and Independent telephone companies."

Settles Arkansas Case for Failure to Furnish Service.

By a settlement out of court, Davy Crockett received $200 from the Southwestern Telegraph & Telephone Co., in settlement of his suit against it for $925 for refusal to install a telephone at his home on the Fourche Dam Pike, near Little Rock, Ark.

The original complaint filed October 20, 1915, asked for $14,400 damages under an Arkansas statute fixing a fine of $100 a day on companies refusing service. He claimed that 144 days had elapsed since his application was rejected. An amended complaint brought in accord with an amendment to the law, which fixes the penalty at $5 a day, asked for $925 damages for 185 days.

In answer to the amended complaint the company set up that it was unable to give individual service at the time, but offered a two-party line connection, which was refused.

Hearing on Hours of Labor for Women in Wisconsin.

On Friday, March 2, the Industrial Commission held its first hearing at Madison, Wis., on the petition of the Wisconsin Federation of Labor for a reduction in the number of hours women may work.

At this hearing proposals for a thorough investigation of the entire subject were received by the commission. Notices of this first hearing were sent to the various associations interested and to manufacturing establishments which employ a large number of women.

The Wisconsin Federation of Labor in its petition asks the Industrial Commission to prohibit all night work for women, and to determine what shall be the hours of labor in each industry in which women are engaged. Under the present law women may work 10 hours per day and 55 hours per week in all industries if their work is day work, and 8 hours per day and 48 hours per week if they work at night.

The Wisconsin Federation of Labor asked that substantial reductions be made in the hours of labor which women may work in all hazardous and fatiguing occupations.

Dr. C. A. Harper, state health officer, told of the effect of excessive labor on women.

On March 9 and 10, the commission held hearings in Milwaukee, summoning principally people interested in the garment trades. Hearings will be held in Oshkosh, Racine, LaCrosse, Superior and Eau Claire.

No complaint has ever been filed before the Industrial Commission that affects so many trades from mercantile interests to all of the telephone lines in the state.

The Industrial Commission is vested with power to make such determinations of the hours which women may work in various industries as are asked for by the Wisconsin Federation of Labor. It will thoroughly investigate the entire subject before rendering its decision.

Kansas Commission Approves Plans for Lawrence Merger.

The Kansas Public Utilities Commission has issued an order giving the terms under which consolidation of the two telephone companies in Lawrence, Kans., will be effected. The merger is to be effected within one year after W. P. Hemphill takes charge of the two plants for the Kansas Telephone Co., the new purchaser.

The total capitalization of the new company was fixed by the commission at $400,000. The capitalization of the Bell company was fixed at $230,000, a reduction of $20,000 from the amount asked by the company. The capitalization of the Home company was fixed at $110,000 and $60,000 was allowed to effect the consolidation.

This will be paid for in securities of the Kansas Telephone Co.

With the final consolidation of the two plants, a new schedule of rates will become effective as follows: Four-party residence, $1.25; single line residence, $1.75; business wall telephones, $3; business desk telephones, $3.25. The commission reduced the rates on the business telephone by 50 cents a month, the original application asking for a rate of $3.50.

The commission approved the issuance of the preferred stock by the Kansas Telephone Co. for $190,000, and first mortgage bonds to the amount of $210,000.

Responsibility of Company to Promptly Answer Subscriber.

An interesting suit that will probably decide just how far a telephone company is responsible for failure to answer promptly the signal of a subscriber will be tried in the federal court at Charleston, S. C., probably in the April term. The case originated in the circuit court at Spartanburg, but has been transferred to the federal court.

The suit is that of the Standard Iron Works, of Spartanburg, against the Southern Bell Telephone & Telegraph Co., and asks actual damages in the sum of $6,000 because of the alleged failure of the Spartanburg central to respond when representatives of the iron works desired to call the fire department and give a fire alarm. The fire occurred on the night of May 2, 1916, the complaint alleges. It is alleged that when an effort was made to telephone the alarm to the fire department efforts were made to get central for 30 minutes, but the operator failed to answer.

On account of the delay occasioned in getting word to the fire department, the fire gained such headway that a loss of $6,000 was sustained by the company, when the fire could have been promptly extinguished in its incipiency if prompt service had been obtained, it is alleged. J. C. Otis, a well-known attorney of Spartanburg, represents the plaintiff.

Payment for Telephone Temporarily Discontinued.

Judge Parmenter of the city court at Troy, N. Y., has decided the action of Evanetta Hare against the New York Telephone Co., in favor of Miss Hare. She is awarded $150 damages and costs.

Miss Hare was absent from the city during part of last summer, and in the middle of July the company discontinued the telephone in her home because advance payment for the service had not been kept up. Upon her return Miss Hare made application to have the service restored and was informed that this action could not be done unless payment for time during which the telephone was out of the house was made, and this Miss Hare refused.

The matter was carried to the public service commission, which body decided that the question was a legal one in which the commission had no jurisdiction. Miss Hare then brought suit in the city court. The judge in his decision declared that the company had no legal right to cut off service so long as the contract with the telephone company had been in effect for more than one year.

Pennsylvania Commission Gives Views on Competition.

The Pennsylvania Public Service Commission in approving the application of the Farmers' Mutual Telephone Co., of McKean township, to extend its service to the borough of Middleboro, on February 13, clearly defines the policy of the commission with respect to competition, holding that no company is entitled to monopolistic privileges in any territory unless such company is organized and equipped to give to the public adequate service at reasonable rates.

It was the opinion of the commission that the protestant company, the McKean Independent Telephone Association, was neither organized or equipped to render public service in such a way to entitle it to an exclusive field and therefore the application of the new company was approved.

Interchange of Service Bill Killed.

The house of the Oregon legislature by definite postponement, has killed house bill 464, by Tichenor. This bill required interchange of telephone service in cities where more than one system prevails.

To Hear Spokane Injunction Case.

The injunction proceedings brought by the Home Telephone & Telegraph Co., of Spokane, Wash., against the city of Spokane, Wash., to prevent the cancelation of its franchise, will be heard by Federal Judge Rudkin, April 17.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

February 16: The Merchants Association, of Lancaster, Los Angeles county, filed complaint against the Antelope Valley Telephone Co. It asks that the company be directed to operate its service in Lancaster and vicinity from 6 a. m. to 10 p. m., everyday excepting Sundays. The exchange is now operated from 8 a. m. to 8 p. m., daily except Sundays, and on Sundays from 3 a. m. until noon. The Merchants Association states that from 6 a. m. to 8 a. m. is the most important part of the day to its members.

February 21: Hearing in the matter of rates in San Francisco.

February 23: F. Dalidio and Tognini and Ghezzi, operating a telephone system in Cayucos, San Luis Obispo county, filed an application for the establishment by the commission of rates to be charged for telephone service by them. They have no stock or bonds outstanding and no indebtedness. The total receipts of the system for last year were $1,000 and the expenditure $700. The present rates are 50, 75 and 87½ cents and $1 a month for rural line service for the Dalidio part of the system and $1 a month for Tognini and Ghezzi portion. These two being now united and a uniform rate is asked.

March 9: Hearing on rates of the Pacific Telephone & Telegraph Co. in Burlingame.

FLORIDA.

March 20: Hearing at Tallahassee in the matter of the building and facilities of the Apopka Telephone Co. It is charged that the present building and facilities are inadequate and unsuitable.

ILLINOIS.

February 20: Request made for approval of a new contract for service connections between the Central Union Telephone Co. and the Minier Mutual Telephone Co. for interchange of service between Minier and Delavan. The Central Union now enjoys these connections, but a new contract has been negotiated which will make no difference in the service.

February 21: Boone County Rural Telephone Co. authorized to issue promissory notes to the amount of $3,300 for the purpose of discharging and refunding obligations of an equal amount. The new notes are to be issued for a period of one year with the privilege of renewal for a further period not exceeding two years.

February 23: Petition filed by city of Peoria complaining that the Central Union Telephone Co. refuses to install a telephone without first obtaining a year's contract from the subscriber. It is asked that an order be entered requiring the company to install selective ringing on all party lines. The city also requests that the company be required to resume its former practice of listing, for $1 a month, the name of a party in the telephone directory, where the party is in the same office in which a business telephone is installed at regular rates for another subscriber.

February 26: Approval given of joint pole agreement between the DeKalb County Telephone Co., of Sycamore, and the Central Union Telephone Co. It provides for the joint occupancy and division of the cost of maintenance of a line of poles along the highway between Sycamore and Genoa, and also certain poles in the city of Sycamore.

February 27: Petition filed by the Illinois Telephone Co., asking authority to purchase from Charles E. Patterson, owner of the Patterson Telephone Co., certain lines located 2½ miles north of Jacksonville. The company also asked permission to purchase for $3,000 cash the exchange of the Wrightsville Telephone Co., located in and about the village of Wrights.

March 6: Hearing at Springfield, on petition of Plymouth Mutual Telephone Co., to restrain Plymouth Farmers Switchboard Co. from constructing and maintaining a telephone business in the village of Plymouth without obtaining a certificate of convenience and necessity.

March 6: Hearing at Springfield on the joint application of the reorganization committee of Western Illinois Telephone Co., and the Golden Farmers Telephone Co., for the approval of sale by the reorganization committee of Western Illinois Telephone Co. to the Golden Farmers Telephone Co. of their exchange in Golden.

March 6: Hearing at Springfield on the application of the Altona Farmers Telephone Co., for an order authorizing the issue of $2,500 of its capital stock.

March 7: Hearing at Springfield on application of Crescent Telephone Co., to change telephone rates at Erie, Hillsdale, and Port Byron.

March 7: Hearing at Springfield in the matter of proposed advances of rates for telephone service at Melvin and vicinity stated in Schedule I. P. U. C. No. 1, of the Melvin Telephone Co., effective February 1, 1917.

March 13 and 14: Hearing in Chicago on the petition of the city of Peoria to compel the Central Union Telephone Co. to reduce its telephone rates to subscribers in the city of Peoria, and the cross petition of the receivers of Central Union Telephone Co.

March 27: Hearing at Galesburg in the case of the Galesburg Union Telephone Co. vs. the Central Union Telephone Co., for physical connection and long distance connections.

INDIANA.

February 16: The LaFayette Telephone Co. filed petition for authority to increase its capital stock from $300,000 to $400,000. A small part of the increase will be used to extend the company's underground system and for an extension to its switchboard to take care of additional subscribers. The remainder of the increase will be issued from year to year as needed for additional equipment.

February 19: The Home Telephone & Telegraph Co., of Fort Wayne, filed petition for authority to issue $250,000 additional common stock. It will be used to retire $215,000 in outstanding bonds and the balance in making improvements necessitated by the development of the district served by it.

KANSAS.

March 20: Hearing on the application of the Missouri & Kansas Telephone Co. for an increase in telephone rates in the city of Hutchinson, Kan.

MINNESOTA.

March 16: Postponed hearing at Thief River Falls on petition of the city of Thief River Falls for connection between the toll lines of the Northwestern Telephone Exchange Co. and the Thief River Falls exchange of the Tri-State Telephone & Telegraph Co. This hearing was originally set for March. 9.

MISSOURI.

February 23: Permission granted Cass County Telephone Co., of Harrisonville, to increase its capital stock from $50,000 to $75,000. Permission was also given the company to purchase the property of the Southwestern Bell Telephone Co., at Pleasant Hill.

NEBRASKA.

February: It appearing to the commission that the rates proposed are standard rates for equipment desired, it is ordered that the Pierce Telephone Co. be given authority to make these increases: 15 cents per month extra for residence magneto desk set; 25 cents per month extra for business magneto desk set; 50 cents extra for wall type residence extension; 75 cents extra for wall type business extension; $1 for desk type business extensions.

February: On application of Newport Telephone Co. to increase rates from $1.25 a month to $1.75 and switching charges from 25 cents to 50 cents a month, the commission ordered that classification of service be made, and that the following rates be charged: Business, $1.75; residence, $1.50. No increase allowed in switching charge.

March 1: Supplemental order in case of Newport Telephone Co. for increase of rates, permits a switching charge increase to 40 cents a month. Continuous exchange service is ordered given from 6 a. m. to 9 p. m., except Sundays, when four hours' service is to be given.

March 2: Hearing held on application of Diller Telephone Co. for authority to increase business rates from $1 to $1.50 a month; residence and grounded farm lines, from $1 to $1.15 and metallic farm lines from $1 to $1.25. No objections were filed and no appearance was made in opposition. Commissioner Hall, in charge, orders that the company make a further showing setting forth what disposition has been made of past earnings, whether profits have gone into new plant or have been paid in excess dividends and if depreciation has been taken care of properly. Continued because of insufficient showing.

March 2: Chicago & Northwestern Railway Co. ordered to answer complaints of residents of Crowell and Washington that it refuses to maintain telephones in depots at places named. There are no telephone exchanges in these towns.

March 2: Columbus Telephone Co. ordered to make a showing why, without warrant from the commission, it requires E. G. Loseke and other rural subscribers to pay for batteries unless a yearly contract is made, and at end of 12 months, where such payment has been made, refuse to refund for same.

March 8: Hearing on application of Republican Valley Telephone Co. to increase switching rates.

March 10: Hearing on application of Daykin Telephone Co. for rate adjustment.

NEW JERSEY.

February 28 and March 1: Hearing at Newark in rate investigation of the New York Telephone Co. in conjunction with rate probe of the Delaware & Atlantic Telegraph & Telephone Co.

NEW YORK.

February 19: Petition filed by residents of Argyle asking that the New York Telephone Co. be directed to restore the schedule of rates between Argyle and the towns of Kingsbury and Queensbury which prevailed prior to November 1, 1916, when no toll charges were made between these communities.

March 1: Decision rendered in case of Morse M. Frakel, secretary of the Mediator Publishing Co., of New York, against the New York Telephone Co. He complained that his service on two lines to the publishing company's office had been discontinued. The telephone company contended that Mr. Frakel used profane and obscene language over the telephone. The commission ruled that any subscriber who uses profane language over the telephone, maliciously places the receiver against the transmitter to make a shrieking noise, flashes the signal continually, or fails to answer when called, assumes the risk of having his telephone permanently removed. The telephone company is permitted to discontinue service to Mr. Frakel or to any other subscriber who knowingly permits him habitually to use the telephone.

March 9: Hearing at New York in complaint of Charles M. Andrews, of New York City, against New York Telephone Co. as to disputed accounts for telephone service.

OHIO.

February 21: Application filed by the Ohio State Telephone Co., for authority to issue $5,535,200 for the purpose of refunding $2,156,000 of the bonds held by the United States Telephone Co., bonds to the amount of $2,676,000 held by the Cuyahoga Telephone Co., and bonds aggregating $200,000 held by the Youngstown Telephone Co.

February 22: Complaint filed by Herman Brendal, of Dayton, that the Central Union Telephone Co. has refused to install a desk telephone for him.

OREGON.

February 26: Physical connection ordered in case of the Tillamook County Mutual Telephone Co. vs. the Pacific Telephone & Telegraph Co., for the interchange, between them, of all long distance traffic originating at or destined to stations upon the lines of the Mutual company outside the corporate limits of the city of Tillamook. The order becomes effective March 15 and traffic is ordered interchanged without discrimination and without restraint. The application of the order is confined solely to intrastate messages and is not to be construed as in any wise affecting interstate commerce. The matter is not at this time closed upon the commission's docket and jurisdiction is retained by the commission to make such other or further orders as may be deemed necessary or appropriate in the premises. The Mutual company is to install and maintain at its own expense the necessary plant and equipment for the connection at the Pacific company's exchange.

SOUTH DAKOTA.

March 1: Physical condition ordered on the application of the Western Farmers' Telephone Co., with the Redfield Telephone Co., at Tulare. The rural line of the Redfield Telephone Co., which enters Tulare, is to be connected with the exchange of the Western Farmers' Telephone Co. in Tulare upon the basis of not to exceed $2.25 per year per telephone. The cost of making the connection is to be borne by the Western Farmers' Telephone Co. Each of the companies is required to enter into written contracts with each and every telephone company with which it has either direct connection or connection through a farm switch or otherwise. The order becomes effective April 1.

March 1: In the application of the Olean Telephone Co., of Turton, the company was authorized to adopt and establish the following schedule of monthly rates: Individual or main-line business, $1.75, two-party business, $1.50; residence, $1.25; rural party lines, $1.00. These rates are subject to a discount of 25 cents per month where the rates for exchange service are paid on or before the 10th of the current month and where the rural party line rates are paid quarterly in advance, payment to be made during the first month of the current quarter. The rates become effective April 1.

March 2: The Chicago, Milwaukee & St. Paul Railway Co., ordered to install in its depot at Butler, before April 1, a telephone instrument and connection with exchange of the Butler Telephone Co. The complaint in this case was brought by August Klebe. The commission found that public necessity and convenience demand and require the telephone in the railroad depot.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

618. What happens when the load of the induction motor is increased?

619. In dynamo-electric machinery what determines which part shall be called the field and which part the armature?

620. Does reversal of the direction of rotation of the rotating magnetic field of the induction motor have any effect in the direction of rotation of the motor shaft?

621. When do induction motors have the same characteristics as a set of transformers with short-circuited secondaries? What is the principle underlying the starting of induction motors?

622. Illustrate the starting of an induction motor.

623. What precaution should be taken relative to the mounting of the starting switch of an induction motor?

624. What is the purpose of extra resistances in the rotor windings of some induction motors? How do they operate?

625. How must motors, operating from single phase circuits, be run?

626. What objection is there to the use of synchronous motors? Is it a serious objection to their use in telephone exchanges?

CHAPTER XXIV. Power Plant Prime Movers (Continued.)

627. *Fundamentals to be remembered in considering operation of single phase motor.*—In order to understand the operation of the single phase motor, it is necessary to have clearly in mind the fact that a direct current series motor will turn over its armature when alternating current is sent through its windings. While the inductance reactance of such a motor will seriously increase the normal resistance of its windings to alternating current, and eddy currents will be present in great strength unless it is very well laminated, the currents in both the field and armature windings *must* be in exact phase with each other, since their windings are in series.

This means that the inductance reactance of the motor, producing lagging currents, is the combined effect of the inductance reactance of the field and that of the armature *added* together. In fact, fan motors of small size are made for use on either alternating current circuits or direct current circuits, but such motors are always series wound, provided with a commutator, and with well laminated field pole pieces to prevent the formation of eddy currents.

628. *Operation of single phase motor.*—In the single phase motor of moderate size, the circuit of which is shown in theory in Fig. 196, the motor is started and brought up to its running speed without load as a direct current series motor energized with alternating current. It is provided with a series field winding *S*, which is in use only during the time of starting. When the main switch (Fig. 196) is thrown to the right the direct current winding of the armature, *A*, the commutator, *C*, and the series field, *S*, are all parts of a circuit through which the alternating current from the line passes.

Being in series, the current in both the armature and the series field must be in exact phase and, since the current in both the armature and series field is in the same direction at any given instant and always of the same strength at any given instant in the two, the field and armature are energized in the same way as would be the case in a direct current motor, and the armature turns.

When the armature has reached approximately running speed, the switch is thrown to the running position, to the left in Fig. 196. The starting winding on the armature now acts as the armature

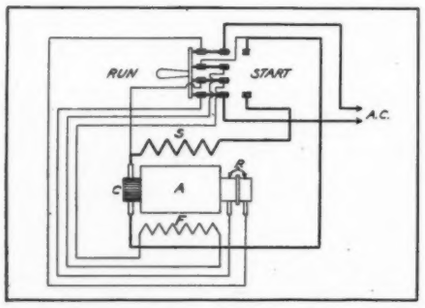


Fig. 196. Theory of Single-Phase Self-Starting Motor.

winding of a direct current generator and the current generated is passed through the shunt winding, *F*, of the motor, serving to maintain a constant and permanent magnetic field as long as the rotation of the armature continues. The alternating current is sent, under the same conditions of switch connections, directly into the main armature winding and the motor runs as a synchronous motor until its load is increased to a value above its capacity, when it will stop.

Motors of this type and of similar types are very satisfactory wherever it is not

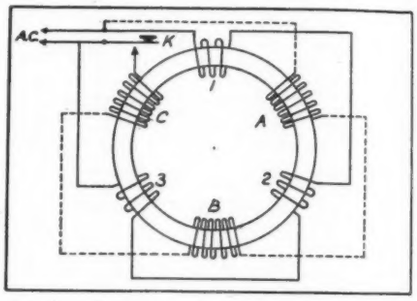


Fig. 197. Theory of Split-Phase Motor.

advisable to install some form of induction motor. They *must* be installed wherever single phase alternating current is the only kind of power available to the designing engineer.

629. *The split-phase type of single phase motor.*—It is possible to operate a multi-phase (two-phase or three-phase) induction motor from single phase current by first bringing it up to synchronism and then opening the circuit of all but the one-phase. This method is known as the split-phase method in its practical application. It is employed in telephone power plants in connection with the operation of very small induction motors for driving ringing generators.

In practice, the motor is never started from the two or three-phase circuit. It is connected to a single phase circuit and an artificial phase difference is produced in two windings by a difference in their reactance or resistance, or both. The theory of this type of motor is shown in Fig. 197.

In this particular form, the stator is provided with two separate windings. One winding, *A, B, C,* is composed of a great number of turns of fine wire. The other winding, 1, 2, 3, is composed of coarser wire and is the running winding. When the motor is to be started, the main switch is closed, the key, *K,* is depressed and a rotating magnetic field is created owing to the following fact:

The winding, *A, B, C,* having a great number of turns of fine wire, has a much greater inductance reactance and ohmic resistance than the running winding, 1, 2, 3. When the two windings are thrown in parallel on the same alternating circuit, therefore, the currents in the winding, *A, B, C,* will lag behind those flowing in the winding, 1, 2, 3.

This lag in the starting winding being greater than the lag in the running winding, causes the magnetic field of the stator to travel around the frame in the same way as the field in the multi-phase induction motor travels around its frame. Induced currents are produced in the rotor windings and the motor starts. When the synchronous speed is reached, the key, *K,* is released and the motor runs under load as a single phase synchronous induction motor.

It is obvious that any one of several methods may be used to produce the rotating field by splitting the phase in this way. For instance, in some motors of this type, the two stator windings are alike but one is in series with an additional reactance coil for starting purposes. In the same way, the phase in the starting winding may be *advanced* by the use of a condenser in series with the starting winding.

Any method that will result in sufficient phase difference between the current in the running winding and that in the starting winding to produce a rotating field of sufficient strength to give use to the required induced currents in the rotor winding, will serve to operate this type of equipment.

In telephone offices, located in large cities where the speed regulation of the central station alternating current generators is sure to be good, this type of motor is particularly suitable for driving ringing generators delivering the pulsating currents required for certain common battery selective systems. Their constant speed assures impulses of uniform time duration and of uniform voltage.

630. *Method of coupling charging generator and motor.*—While the direct connected arrangement is very satisfactory for the charging generator driven by any form of motor, it is limited to motors and generators having the same normal speed of rotation. In cases where the generator and motor have different speeds, it is perfectly satisfactory to drive the generator by means of a belt and pulley.

When using a belt for this purpose, or in fact for any other purpose, it should be made as long as conditions will permit in order that it may be run slack rather than tight. The equipment should be placed so that the slack side of the belt is at the top. If this is done and the centers of the machines are placed as far apart as possible, the belt drive will be found perfectly satisfactory. Of course, only double endless leather belts are suitable for this service.

(To be continued.)

Traffic, Plant and Commercial Employes Meet at Carbondale, Ill.

A meeting of the chief operators, managers, plant chiefs and collectors of the Murphysboro Telephone Co. was held at Carbondale, Ill., February 22 and was a decided success from all viewpoints, particularly instructive and enjoyable socially. Nearly 100 were present, all of whom unanimously declared it to be the best in the history of the company. The meeting was in charge of the company's general superintendent, W. L. Ford.

The entire day was consumed in instruction work and up until 9 o'clock in the evening. At 1 o'clock Mayor E. K. Porter delivered an address of welcome at the Armory Hall.

After 9 o'clock a dance at the armory concluded the day's program.

The following program shows the diversity of traffic, commercial and plant subjects discussed:

"How to Become a Successful Chief Operator," by Elsie White, Carbondale; Maud Hueston, Creal Springs; Ruth Morris, Jonesboro.

"The Greatest Needs, as You See Them, of Our Company, to Improve the Operating Conditions," by Stella Barth, Herrin; Gladis Newman, Thompsonville; and Neva Kittner, Eldorado.

"Proper Phrases, When and How They Should Be Used," by Lena Noetzleman, Marion; Ethel Alexander, Vienna; and Mary Harhis, Carterville.

"How More Benefits Can Be Derived from Our Regular Operators' Meetings," by Emma Forbes, Johnson City; Bettie Williams, Pinckneyville; and Addie Overstake, Carrier Mills.

"How Carelessness and Discourtesy Affect the Service," by Mae Hall, Harrisburg; Mrs. Casper, Cypress; and Ethel Smith, Cutler.

"Supervising, Timing and Service Charges," by Nellie Hoyt, West Frankfort; Gladys DeVere, Sesser; and Anna B. Mulvey, Stonefort.

"Time Allowance," by Edyth Clipner, Murphysboro; Mrs. Claude Shelton, Galatia; and Vera Talley, Cambrie.

"Local Operating in General," by Anna Henderson, DeQuoin; Dorothy Worfield, Royalton; and Ada Pierce, Ava.

"Relations with the Public," by Grace Clayton, Benton; Mrs. Hodge, Belknap; and Violet Taggart, Willisville.

"Definitions of Telephone Apparatus," by Florence Davis, Anna; and Mrs. W. C. Molohan, New Burnside.

"Importance of Calls," by Marie Brewster, McLeansboro; and Maie Kee, Christopher.

"Duty to the Company," by Katherine Stewart, Cobden; Sophia Fuhrhop, Campbell Hill; and Monta Rueter, Grand Chain.

"How to Best Serve Our Rural Subscribers," by Emma Clark, Pittsburg; Mona Cavitt, Ozark; and R. M. Hampton, Hampton.

"Complaints and How They Should Be Handled," by Anna Jungers, Carbondale.

"Commissions' Rulings, and Relations of Employer and Employes," by E. J. B. Aldridge, DuQuoin.

"Work Orders and Exchange Bulletins," by A. L. Steber, Marion.

"New Business and Public Relations," by W. M. Aaron, Harrisburg.

"Material and Rural Subscribers." by O. W. Fullerton, McLeansboro.

"Exchange Reports and Correspondence," by J. M. Capeu, Anna.

"Maintenance and Supervision," by C. Gilbert, Carterville.

"Dry Batteries and Rural Trouble," by Hugh Spencer, Vienna.

"Installs and Disconnects and Trouble Reports," by H. P. Allen, West Frankfort.

"Storage Batteries and Plant Quarters," by W. R. Davis, Herrin.

"Switchboards and Testing Toll Lines," by E. Gower, Carbondale.

"Cable and Cable Terminals," by L. F. Dickson, Carbondale.

"How to Clear Trouble," by A. W. McCall, Pinckneyville.

"Installing Telephones," by A. Garson, Marion.

"Common Battery Switchboards," by Van Baber, DuQuoin.

"Rural Lines" by Mr. Cavitt, Ozark.

"Toll Line Work," by A. M. Halbin, Marion.

Fire Chief Directs Fire Fighting by Telephone.

Fire protection by telephone is in prospect for new sections of Knoxville, Tenn., which is expanding over territory without water mains. Fire Chief S. B. Boyd is becoming an adept at fire fighting by telephone. His bell called him out of bed before daylight recently and he found that J. T. R. Winstanley, residing at Blue Grass, a suburb 12 miles out, was on the line. The caller asked what to do about a fire in his house which had been burning for three hours but which he could not locate.

"That's an easy one," said the chief. "Just tear up your hearth and you will find that your hearth box is on fire."

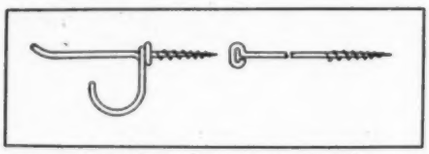
Mr. Winstanley protested that he had a concrete hearth and that the diagnosis must be wrong, but the chief averred there could be no other explanation Some time after breakfast, Mr. Winstanley called again to express his gratitude and say that the chief had been right, as usual.

Practical Subjects—Discussions

Fastening Telephone to Wall When Screw Doesn't Hold.

Recently I fastened a wall telephone to a plasterboard wall where the two screws on the right hand side would not hold at all.

I asked the woman of the house if she had a wire coat hook—she had. I took



Home-Made Screw for Wall Telephones.

this coat hook and straightened it out, then I put it through one of the screw holes to measure to the outside sheeting, and cut it off 1⅞ inches from the backboard of the telephone. Next I bent the end around and formed an eye, the eye serving as a head to turn it in with. I then had a long screw that held O. K. The accompanying sketch shows how the long screw was formed.

Hemlock, Mich. A. A. McCullagh,
Local Manager Union Telephone Co.

Sunshine and Shadows Along the Telephone Trail.

By Well Clay.

In *faith* was dug the rugged block
Of marble from the quarry's maw;
With *hope* was chipped away the rock
And chiseled out each flaw;
Until at last an image fair—
The ages long concealed—
Was brought to light and beauty rare
When *charity* stood revealed.

"The three Graces" are certainly exemplified in the conduct of every telephone exchange, if nowhere else. It is just as much of an effort on the part of each manager to evolve and evolute an exchange from its first conception to its final perfect state—if that is ever reached—as it is for the sculptor to fashion the beautiful statue from the rough stone.

No sculptor ever made any very short cuts in creating a thing of beauty from unfeeling marble. It was done only through infinite labor and days and weeks, or years, of the hardest drudgery. It did not seem to be drudgery to the sculptor because he was doing what he liked to do. He would never have made it the beautiful image unless he was in love with the work—never would have made a success, or even have stuck to the finish, if he had not been weaving his very soul into the creation.

Some men love work which others think is slavery—nothing short. Others toil for years in an endeavor which most of us think scarcely worthy of serious consideration for a minute. It is good that things are so distributed because it gives us all a chance to criticise the other fellow's work and to express the satisfaction that we are more worthily employed.

In the beginning of our telephone work, we certainly had a lot of faith in the proposition or we would not have entered the field. We must have all sensed something of the finished form of the creation which was to be or we would not have entertained the *hope* which we did. And last but not least important, when we finally began to see the lines in our work which gave forth some inkling of what the final result was to show, we then began to comprehend that there was considerable of a *charitable* cast about it which, though beautiful in the abstract, was apt to be embarrassing when we incited criticisms from financial critics.

We began to discover that *charity* in marble, which cost practically nothing to maintain, and *charity* which consisted in giving away, without charge, to people well able to pay, of at least 25 per cent of our output of service, were two very different and distinct propositions. It was like the young man who found out that keeping a photograph of his best beloved on his dresser where he could see it every day at least twice, and then afterwards keeping that same dear creature in the necessities and some of the luxuries of life, were two different propositions, so far as cost was concerned.

Is it charity, necessity or foolishness which makes telephone companies keep on letting a large portion of their output be confiscated daily, without thanks, by people who are twice as able to pay for it as we are to lose the revenue? I do not mind, where true necessity requires, and poor folks cannot pay for doctor or emergency calls. But where people, who are abundantly able to pay for a telephone in their house, will deliberately and continuously sponge their daily needs, year in and out, and then try to cover up their crime by saying that they would have a telephone installed only they have little or no use for one—that is adding insult to injury.

I tell them I hardly ever drink water myself but I have a well in my yard for emergency purposes, or some such bright and happy illustration, and let it go at that. But all the same, I sometimes feel that I would have a perfect liberty, with such a set of scruples, to go into their woodshed and take an armful of wood, or a bucket of coal, occasionally, and say on my way out that I used so little that it didn't pay me to buy some of my own. It is the same thing in principle.

If I only wrote one lettter a year, I would have to pay for a stamp just the same because I do not think the postmaster would think he ought to furnish the stamp under the circumstances without charge.

The most of us make what few dividends we do set aside, by getting along without the things we ought to have to improve the service for those who pay. This we are compelled to do because we have to furnish so much dead-head service.

I wonder how it would work if we would adopt a system of having our operators ring two short rings on all calls which are asked for by persons who are not paying therefor. It would be equivalent to saying to the party called: "Dead-head wants to speak to you."

The number of two ring calls would be an indication to the subscriber of how much he was paying for the other fellow when he paid his monthly rental. It would at least have an influence on cutting down the amount of free business.

Now that whiskey is getting to be a back number, we should petition the proper authorities to have the old saying changed to the following: "Talk May be Cheap but it Takes Money to Buy Batteries."

We may be even compelled to hark back to the heathen Chinese for a cue (no joke intended) on how to run our business. "No Money, No Shirtee" has saved many a poor Chink from doing a public service without financial reward. It is safe, sound and sufficient as a business motto. "No pay, No talk," will save many a dividend from becoming a deficit.

APHORISM: There's a statue in every rock and a profit in every plant—if you can get them out.

Interesting Information Regarding an Ohio Company.

The past year has, I believe, been a prosperous one for Independent companies in spite of advances in price of material.

Our plant—the Portsmouth Telephone Co.—made a gain of 700 stations in 1916 and so far this year has gained almost 100, 60 new orders being taken last week. As we do not solicit new business, it is hard to tell what we would do with a good solicitor on the job—and we are not looking for any.

We now have near 5,700 stations, including 600 farmer subscribers, on our main office board, and one 175-line board at a small town in the eastern part of the county.

Onr party line development has been so great during the last year that we have been compelled to purchase another

section of three positions to take care of the traffic.

At present we are completing about 45,000 calls per day at our central office. This with 10 local and not more than two rural operators. Most of the time, one rural operator handles her 300 stations besides trunks to the smaller exchanges and service trunk for toll.

We have two regular troublemen—one for city trouble and one for all country lines. The country man also installs most of the country stations and sometimes does city work. Of course, there are times when they need help but not often.

Our city installations are taken care of by two men who run the drops and short lines in addition to placing the telephones. They also attend to move orders and removals and minor repair work.

Our traveling equipment consists of four Ford cars, one Miami trailer, and a motorcycle.

We have a bunch of the most willing workers in the country, fellows who are always willing to come out regardless of weather or time. Twice the past year, we have had bad accidents and the salaried men have volunteered to come out on Sunday, and after regular hours, and stayed with the job until it was finished. The day men are just as willing but are paid for their overtime. This spirit is not shown everywhere, but could be if everyone would help each other.

We have just completed a phantom farmer line which is about the best talking line I have ever listened over. The phantom circuit is 11 miles No. 12 iron and the physical end, six miles of No. 12 iron and carries eight stations. Retard coils are used on the line end and the repeating coils in the office at our magneto exchange.

Most of the talking is done through our main exchange, to reach which the subscriber talks over an additional three miles of No. 12 iron and four miles of No. 22 gauge cable.

We have nine other phantom farmer lines but the line mentioned is the best of all, the others ranging from two to 16 miles in length.

There are some who object to phantoming farm lines, but if they are properly cared for, save stringing many miles of wire. They have this good feature in particular—lines *have* to be kept in good condition for phantoms won't work properly through brush and trees.

Portsmouth, Ohio. C. W. Kugelman.

The Student Plan of Selecting Employes.

The secret of successful business enterprise is fitting the proper employe into the place best suited to his ability and temperament. In other words, while men make organization successful, the reverse is seldom if ever true. The right man for the right place solves all problems of business.

Organization and system wait for the human element, the plant is useless without the manager or superintendent. It is equally important and true that the employe must find his life work—labor that will not only let him out, but actually develop and draw him out, giving to him the best opportunity to best express himself.

With this end in view, the large corporations are more and more introducing and developing the so-called "student" plan of selecting employes. The demand today is for big, exceptional men, having character, personality, capacity, education, ability and adaptability—men who only need opportunity and practical experience to demonstrate their right to step into the positions of responsibility which are always open, as leaders and executives.

The exceptional man often makes or creates for himself a new position by virtue of his peculiar ability and characteristics. Very often new industries are developed from the same cause. The student plan is therefore two-fold: First the employe must find himself; and second, the position must find the employe. Where this two-fold plan is worked out—the student finding himself and the company finding the executive—all reports so far term it entirely and uniformly successful.

In a number of cases it has been found, after a short trial, that the student was not suited for one department, but made good in another. In very few cases has it been found necessary to dispense entirely with the student's services. This is due, in large measure, to careful selection before offering employment.

The convenience of the plan is thus mutual, the company in a reasonable length of time is able to satisfy itself that the student has in him the makings of a high potential employe, or else dispenses with his services. The student has opportunity and time to make up his mind whether the work is worth the investment of his life, and that he is suited for the position aimed at.

A good education and a clean character are essentially the best foundations for a good start in business, but even a college education or technical training will not work miracles. Not only must men work their brains in the right direction but there must go with this, definite control of all the faculties in order that the whole mental and physical machinery may work in absolute harmony.

The "student plan" provides opportunity for practical training under experts. When good material has been found, this training should be supplemented by such additional training as may be found necessary to fit him for the special work for which he has been found best adapted.

In short, this plan is an effort to permit mutual investigation by employer and employe. When the student is employed, it is with this understanding. The plan usually covers a period of from one to two years, with 30 days' notice by either party. It is also an effort to cultivate and encourage the *work with,* rather than the *work for* spirit, which is now and has been altogether too common and is the indirect, if not the direct, cause of a majority of labor troubles.

The tendency heretofore has been to keep the employe too much in the dark, as to policy, aims or purpose in any undertaking. This was not only excusable, but necessary, under the old regime—but times and methods have changed. It is now not only possible but feasible to treat employes with more confidence and trust. By means of the student plan of selection, it will be possible to consider the employe as a live cog in the wheel of the companies' machinery, absolutely necessary to the smooth working of the machine.

The definite fixing of responsibility and the investure of confidence in the employe by the employer will unify and harmonize labor and capital as nothing else could do.

The big problem of today in the business world is: "Given opportunity and raw material, to find executives."

The solution seems to be found in the student plan. While it is still in the experimental stage, so far all the indications are that it has in it unbounded possibilities for success.

A definite course of study cannot very well be given until the student has decided upon and shown a decided preference for the duties and responsibilities of a certain department. For this reason many companies are insisting upon the student spending a definite portion of the first year in each department, under the "watch-care" of the companies' representatives. These make a report to the general manager of their observations, according to a pre-arranged table of merits and demerits. This is necessary because of the present tendency toward specialization. In this way, the student can familiarize himself with the routine, policy, plan and purpose of all departments, and this information is very valuable to him when he has made his final choice, approved by the company.

It is the practice of many to attach the student to the head or sub-head of a department in something approaching the position of confidential secretary. This plan is meeting with wonderful success, especially where the department head has been convinced that it has in it wonderful possibilities of success for his department. On the other hand, it has been found that a minimum of success has been possible where the department head was unfavorable to the plan.

Liberty, Mo. P. Kerr Higgins.

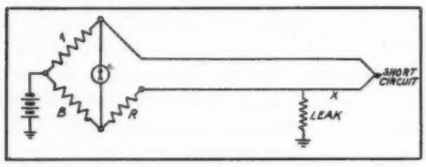
Queries on Theory and Practice

Testing a Toll Line for Grounds.

Will you please give me an answer to the problem of testing a toll line for grounds? We use a Thompson-Levering dial set and what I wish is an easier manner of making the Varley loop test than of having to make the test using the formula. I want to get the distance in miles from the end where the short circuit is put on the line. Suppose the lineman is beyond the trouble (a leak on the line) and he short-circuits the line. I want to be able, without figuring, to tell him how far to come in toward the office to find the trouble. I am not a calculus shark.

It is impossible to locate troubles by any of the bridge tests without doing some figuring. All the methods give the resistance from some place to the fault in ohms, and this must be reduced to miles by dividing the ohms by the resistance of the wire in ohms per mile. For instance, if the test shows 25 ohms to the leak, and the wire has a resistance of 5 ohms to the mile, then 25 divided by 5 gives 5 as the miles to the leak. This is very easy.

To measure the resistance from the short-circuited end of the line to the



Connections for Toll Line Test.

leak, use the connections given in the sketch.

Find out from the directions given in the bridge, just how to connect for a bridge test, or you can easily trace out the connections yourself so that you will duplicate the diagram given. *A* and *B* are the proportional arms of the bridge. Make them equal to each other. For short lines use 100 ohms in each leg or arm. For longer lines, over 20 miles, use 1,000 ohms in each.

Be sure that the rheostat *R* is connected next to the leaky wire. You can tell when you have this condition, for if you get no balance and the galvanometer needle persists in going one way, no matter what the rheostat, then it is wrong. So make a trial connection and see if you can balance up. If the galvanometer deflects the same way with the rheostat set at zero, or on a very high value (like 5,000 ohms), then you must reverse the line wires at the bridge.

Now balance up very carefully. Divide the rheostat value, *R*, by two. This is the resistance from the short circuit to the leak. For copper wire, No. 10 B & S gage, allow about five ohms to the mile of single wire. If *R* is 15 ohms, then the troubleman must come in about 7½ miles. If there is any evidence of foreign voltage in the leak, take two readings—one with the battery positive to earth, the other with negative to earth. Average the two rheostat readings.

Grounded Lines and Induction From Electric Lighting Circuits.

We are troubled with electric light induction. The telephone system is like the ordinary grounded system found in most any small town. Some of the lines are grounded at the main frame and others at the cable terminals. The cables are about 900 feet long. The noisiest lines are some rural lines which the light people over-built for about half a mile but clearing them from six to 18 ft.

The electric light equipment consists of two Fairbanks-Morse, 2,300-volt, three-phase, 60-cycle alternating current dynamos with star-connected armatures and revolving fields. The distribution consists of one 2,300-volt series lamp circuit. The primaries, all three phases, are carried out on pins adjacent to each other. The phases seem to be well balanced, as shown by the ammeters on the switchboard.

The series line is carried on the same arm with the primary wires. There are some four or five lightning arresters on the 2,300-volt lines.

During the day the electric load is nothing but we get the noise just the same as when the load is on at night. The electric plant pole leads are good and high and clear the telephone leads in good shape everywhere. The plant has been built about eight months and the telephone plant has been noisy ever since.

I know the trouble is due to an unbalanced condition of the electric circuits somewhere. What would be apt to cause the trouble and what is the probable remedy? Other towns of similar conditions, that have the same kind of telephone plant and alternating lighting systems, do not experience this induction.

The alternating current series lamp circuit is very likely the chief source of your heavy induction. Such a circuit is, by its very nature, badly unbalanced and there is no way to balance it up. We know of no remedy for this condition except to make the telephone lines full metallic. In some cases telephone companies whose lines were metallic have been obliged to move their poles across the street or even to get them half a block away. The induction from a series alternating current lamp circuit may be very severe.

If the star-connected alternating current generator has its center or neutral grounded, and the power line connected to this generator is not transposed sufficiently, it will account for part of the noise which you are experiencing. There is no neutral wire in the three-phase power line on the poles; the three wires are co-ordinate. You can get 2,300 volts across any two of the wires. If the primaries are properly transposed, you should not get undue induction. But if the series lamp circuit is the cause, you can only make your telephone lines metallic.

Lamp Resistance for Charging Storage Battery.

Please advise us the approximate number and size of lamps necessary to charge a battery (2 plates, each 4 ins. by 5 ins.) in 12 to 20 hours. Also in event the dynamo causes noise in the exchange circuits, what would be an approximate dimension and winding to use for the retardation to absorb this noise? The installation will not justify another set of batteries.

In order to charge the battery in about 12 hours, you will need five 60-watt 220-volt lamps in parallel as shown in the

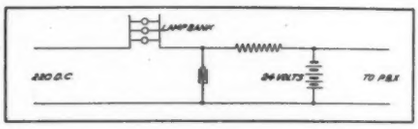


Fig. 1. Circuit for Battery Charging.

accompanying diagrams. The use of two or three lamps will lengthen the time to about 20 hours. This is based on an assumed charging rate of 1.5 amperes for 10 hours.

You must, of course, be guided by voltage and specific gravity as to when the charging is to be stopped. Slow, long charging at perhaps half an ampere, is better than regular charging at full rate. It will keep the battery in better condition.

If the dynamo noise bothers, use a very low resistance retardation coil with a condenser, bridged across the line as shown in Fig. 1. Put the retardation coil between the battery and the lamp bank, and the condenser tap between the bank and the coil. This gives the best combination. It is usually better to buy a retardation coil from any of the reputable manufacturers than to try to make it. The resistance should be only a few ohms. The amount of capacitance re-

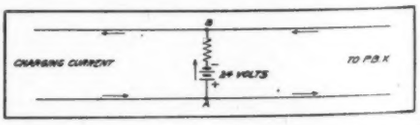


Fig. 2. Resistance Causes Noise.

quired must be determined by experiment. Put a number of 2 m. f. condensers in parallel and add or subtract condensers until the exchange is quiet enough.

Be sure that the delivery wires to the P. B. X go directly to the battery lugs

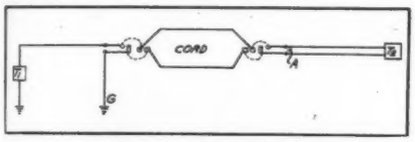
and that the charging wires do the same, entirely independent of the delivery leads. Any resistance in the battery or its connections (Fig. 2), as from *A* to *B*, will tend to cause noise on the P. B. X. Hence use care to lead each wire to the battery lug independently of the other.

Cross Talk Between Grounded and Metallic Circuits.

We have six miles of metallic line on the same poles with a grounded line. The cross talk is quite plain on the metallic line although it is transposed every half mile. What would you suggest as a remedy?

Test for insulation on your metallic line. Leaks to earth will give you cross talk. Make the test just as the line is—that is, connected to switchboard. It may have the leak in the switchboard.

If you connect this metallic line through the switchboard to a ground return line,



Metallic to Ground Line Connection.

using no repeating coil, you will get cross talk, because the ground, *G*, at the board will make the metallic line about as bad as if it were an earth return line.

Somewhere between the metallic line and the ground, *G*, you need a repeating coil. Perhaps as good a place as any is in the metallic line itself, as at *A*. Then, no matter what pair of cords the operator uses, the coil is in service.

Charging Exchange Storage Battery from Rectifier.

Our power plant consists at present of duplicate sets of 12 No. E-5, 80-amp. hr. Chloride cells charged by means of a motor-generator set—one set being charged while the other is supplying the exchange load. It is proposed to abandon this outfit and install a single set of 12 No. F-9, 320-amp. hr. Chloride cells and to charge them by means of a mercury arc rectifier operated from a 25-cycle power circuit.

Is the comparatively low frequency of the power circuit liable to cause rectifier noise to be heard on the talking circuits? If so, can the noise be eliminated by the use of an impedance coil without too great a waste of energy?

The talking circuits in question are of the condenser-impedance coil type and the maximum load on the battery during the charging period would be about 12 amperes.

In order to secure satisfactory switchboard operation, we find it necessary to maintain the potential across the discharge bus bars at not less than 23 volts which, of course, necessitates the use of a 12-cell battery. Would it be necessary to use counter E.M.F. cells to regulate the switchboard voltage during the charging period in order to avoid frequent burning out of lamps? These lamps are rated at 24 volts.

When a mercury arc rectifier is used for charging, is it necessary to employ an automatic circuit breaker in the charging leads?

No, the low frequency of the power circuit is not likely to cause noise trouble. The mercury arc rectifier is used in many exchanges with perfect success, charging while using. An impedance coil is used which does not absorb much energy. It is most efficient to charge the battery during the peak of the load on the telephone switchboard.

It should not be necessary to use counter electromotive force cells, if you carry your charging leads separate from all other wires clear to the battery itself, and do not charge at too high a rate. Of course, the voltage will rise, but the lamps have considerable latitude.

No underload circuit breaker is needed, because the arc automatically goes out if the current falls to zero or tries to reverse. You are safe in this respect.

Induction Trouble from Power Company's Leads.

Our trouble is induction (cross talk) from clear wire from *A* to *B* and the 15-mile party line (Fig. 1) and vice versa. Induction to and from the short party line is not enough to give us very much trouble. Is there any way we can transpose or use phantom coils to overcome this or must we metallic? If so, how far?

In our exchange at *A* we have a 100-line board, magneto, ground return system, 67 drops installed, some 80, 100 and 1,600 ohms, a very few 80-ohm series telephones and the rest are 1,600-ohm bridging. Some of our lines are short, private, some party and some long, heavily-loaded rural lines.

There is to be an electric light plant installed in our town soon, 110-volt direct current. We run in alleys and they will run in streets, but they will have to cross our lines at some places. We are anxious to know if our lines will be affected by the power company's lines. If so, what would you recommend?

If we are caused trouble, will not the power company be liable for all expense of remedying trouble? We both have

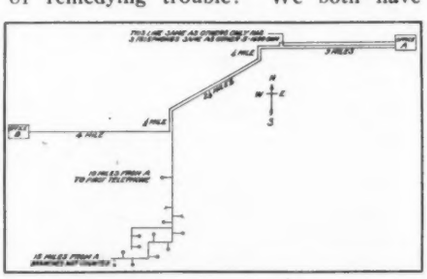


Fig. 1. Circuit Conditions.

franchises. Ours was given by the county in 1910, before the town was incorporated and the power companies in 1916 by the town, which was incorporated in 1915.

The only way to rid yourselves of the cross talk is to make one or both of the long lines metallic, at least as far as they are parallel, or to make one of them a ground return simplex on the other.

The latter plan, Fig. 2, calls for two repeating coils, one in your office at *A*, and the other six miles away, where the

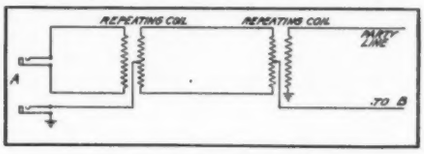


Fig. 2. Suggested Plan.

party line leaves the line to office *B*. The coils must be high grade, rugged, well-balanced, and ring and talk with little loss.

We suggest making the *A* to *B* line a phantom on the party line because, being a link between two telephone offices, it should ring and talk better than the party line. The coils, especially the one six miles out in the country, must be well protected from the weather. This means a moisture-proof box as well as good lightning arresters.

We do not think that the 110-volt direct current lighting mains will give you appreciable trouble. Of course, there will be a slight hum noticeable in some of your telephones, but the people will soon get used to it for you can talk through it with great ease. But if series arc light circuits are put in, look out for induction. Make the light company keep clear away from your wires.

For the legal phases of power interference read the paper presented at the convention of the United States Independent Telephone Association by H. L. Leyer. It was published in the last two issues of TELEPHONY.

Static Electricity Probably the Cause of Shocks.

We have four telephones located in the county building, magneto, metallic. The line from the office is cabled to within two spans of the building and then open wire to the point of entrance and from there, interior wire to the instrument. For the last two winters we have had reports of subscribers receiving shocks from the telephones in two of the offices, not only from the metallic parts of the instruments but from the receiver and desk stand cords. Investigation also showed that shocks were received from radiators and vault doors.

This condition did not affect all those who used the telephones. The building is a two-story one with basement, all floors of hard maple. All lines test clear from crosses and grounds. Can you give us any information as to the cause of this difficulty?

The fact that the trouble is confined to winter and that other objects besides the telephone are affected, lead us to believe that static electricity is the cause.

In winter it is an easy matter to walk across a floor or carpet a few times and by so doing pick up enough static elec-

tricity to give a smart shock when you touch any metal object.

Cases have been known in which injury was sustained by falling from ladders, scaffolding, etc., after being startled by such a static discharge. The discharge alarmed the person, he lost his balance and fell and was hurt by the fall.

If there were any real leakage, you could get it by testing with a voltmeter. Most likely static electricity is the cause of the shocks.

Telephone Earnings Compiled by Interstate Commerce Commission.

The Interstate Commerce Commission has compiled the following comparative table of earnings, for November and 11 months, of 60 telephone companies having annual operating revenue in excess of $250,000:

	1916.	1915.	Changes.	
Total operating revenue	$ 25,096,191	$ 21,750,251	Inc.	$ 3,345,940
Total operating expense	16,433,958	14,282,396	Inc.	2,151,562
Net revenue	8,662,233	7,467,855	Inc.	1,194,378
Taxes	1,507,694	1,178,621	Inc.	329,073
Operating income	7,021,745	6,131,613	Inc.	890,132
Eleven Months:				
Total operating revenue	259,721,892	231,485,801	Inc.	28,236,091
Total operating expense	170,822,910	152,563,452	Inc.	18,259,458
Net revenue	88,898,982	78,922,349	Inc.	9,976,633
Taxes	14,472,161	12,704,102	Inc.	1,768,059
Operating income	72,907,222	64,532,486	Inc.	8,374,736

This is the second statement of earnings of class A telephone companies, which has been issued by the Interstate Commerce Commission. The first statement covered October, 1916, and 10 months. It appeared in TELEPHONY of February 3.

Mutual Company of Erie, Pa., Increasing Facilities.

With $57,000 worth of improvements to equipments and a building to be completed during 1917 the Mutual Telephone Co., of Erie, Pa., next year will become a class A company requiring branch exchanges. This was announced by John Z. Miller, company's general manager, recently.

Improvements and additions to the exchange building will cost approximately $30,000, Mr. Miller said. Switchboard extensions, providing for 2,500 more subscribers and necessitating the employment of 15 more operators, will cost about $27,000.

An addition in the rear of the main building will be completed this month and will house apparatus necessary for the additional switchboard. A new front, three stories high, of imitation granite, will be constructed in the immediate future.

Automatic switchboards at Wesleyville will be installed, affording better service. The same system will be operated at branch exchanges in Erie.

The Mutual company was established 10 years ago with 25 operators and a switchboard half the size of the present one. There are 65 girls employed now and 15 more will be required under the improved system.

Home Company in Paducah, Ky., to Enlarge Facilities.

The Paducah, Ky., Home Telephone & Telegraph Co. has announced plans for extension of its plant in that city and installation of new equipment which will cost between $5,000 and $6,000.

The present building will have a 40-foot addition at the rear, a two-story brick, to provide a garage for the company's cars and storeroom. The upper floor will provide for addition to the operating room, and a kitchenette. The improvements will provide an office for B. Y. Chambers, district manager for the Central Home company. The kitchenette is an innovation in Paducah telephone circles and will serve to cook the meals served at cost to the employes of the company.

Series of Operators' Schools to Be Held in Iowa.

A series of operators' schools are being conducted in Iowa by the department of engineering extension of the Iowa State College. The first school was held March 6 and 7 at Washington, where G. W. Mannhardt is manager. The second school was held March 8 and 9 at Fairfield, where F. H. McQuiston is manager. Other schools will be held as follows:

March 20-21—Oskaloosa, G. W. Gordon, manager.

March 22-23—Marshalltown, W. G. Bowe, manager.

March 27-28—Cedar Rapids, J. M. Rider, manager.

March 29-30—Waterloo, Geo. E. Bickley, manager.

April 3-4—New Hampton, Chas. R. Hurmence.

April 5-6—Mason City, J. W. Hight, manager.

April 10-11—Estherville, J. W. Hight, manager.

April 13-14—Fort Dodge, J. M. Plaister, manager.

April 17-18—LeMars, O. L. Loudenslager, manager.

April 20-21—Manning, Phil Zerwas, manager.

April 24-25—Shenandoah, M. H. Driftmier, manager.

April 26-27—Des Moines, F. D. Cleaver, manager.

In these schools the rules adopted by the United States Independent Telephone Association will be followed.

The advantages of the school are given on a notice sent out by the Iowa State College, which says:

We believe that the telephone operators' schools are:

1 Good for the operator because:
  She gets an idea of the value of standard practice;
  A pride in her calling;
  An acquaintance with other operators of the towns in the community.
2 Good for the public because:
  They have called to their attention that telephone operating is receiving the serious attention of the company.
3 Good for the company because:
  They are good for the public and the operator.

Will you co-operate by sending one or more of your operators to one or two schools in your vicinity?

No fees. But advance notice to the manager in local charge will be appreciated. Have the operators bring notebook and pencil.

Plans for the Convention of the Iowa Association.

The 22nd annual meeting of the Iowa Independent Telephone Association will be held at the Chamberlain Hotel, Des Moines, March 13, 14 and 15. Much interest is manifested in this year's meeting and the attendance will no doubt be large. The exhibit space on the fourth floor is all engaged and fine displays are promised.

E. B. Fisher, of Grand Rapids, Mich., chairman of the board of directors of the United States Independent Telephone Association and W. S. Vivian, of Chicago, secretary of the United States association, will attend and take part in the program.

The officers of the Iowa association have decided that this year they would devote less time to a formal program and more to round table discussion of matters of interest which may be brought up at the time. These discussions will take up construction methods and similar matters of interest to the smaller companies, as well as engineering subjects and accounting methods.

The principal entertainment feature will be an athletic exhibition at Ryan's gymnasium on the night of March 14.

One Way of Eliminating Gossip Over Rural Lines.

"If you have tried repeatedly to get some party on a suburban line only to be told each time the line was busy and you knew just who were causing it to be busy and that they were having a series of morning chats of from 5 to 20 minutes apiece, and when you finally did succeed

m getting the line, you found you were scarcely able to hear because certain persons were 'listening in,'—you can appreciate the feelings of certain farmers in Island Creek township down Steubenville way who by a vote of 48 to 2 voted in favor of a five-cent toll for Steubenville connections." That is the statement made lately in the Ashland, Ohio, Press.

Previously some of the farmers had protested against the five-cent rate, but subsequently some of the objectors remarked that they had learned a few things of late. It is claimed that they hope in this way to eliminate idle gossip of wives and daughters over the telephone.

Strike of Operators and Linemen in Toledo, Ohio, Ended.

By an agreement reached last week by officials of the Ohio State Telephone Co., and representatives of striking operators and linemen in Toledo, Ohio, the strike, which has been in existence almost four months, was terminated.

From Factory and Salesroom

Conventions: Iowa, Des Moines, March 13-15; Florida, Jacksonville, March 23

J. C. Hubacher, General Manager of the Monarch Company.

At a meeting of a board of directors of the Monarch Telephone Mfg. Co., of Fort Dodge, Iowa, last week, J. C. Hubacher, the company's vice-president and general superintendent was made general manager. Mr. Hubacher succeeds Walter H. Trimm, who has resigned as secretary and general manager, effective March 15. Mr. Trimm at that time becomes associated with an auto truck sales company in Chicago.

J. C. Hubacher.

Lyman Q. Trumbull, sales manager of the company, was elected secretary in place of Mr. Trimm. Mr. Trumbull has been with the Monarch company for 12 years, and is well known by operating telephone men.

Mr. Hubacher, who has just been promoted to the general managership of the Monarch company, has been connected with the telephone industry since 1899, when he became general foreman for the Victor Telephone Co. He was one of the organizers of the Monarch Telephone Mfg. Co. in 1901 and has been connected with it, especially in the manufacturing end, ever since.

The Latest Development in Telephone Lightning Arresters.

Frederick R. Parker, of Chicago, is placing on the market a new form of electrode for lightning arresters, which is almost the last word in lightning protection devices. These electrodes are to be sold under the trade name of "Metalodes." This is a very apt name selection, as they consist of the highest grade of carbon blocks or electrodes electroplated with a double coating of metal. These improved electrodes are not for any one form of arrester in particular, but are adapted in general to all forms and makes of lightning arresters.

Every telephone man who has had anything at all to do with carbon lightning arresters—and it is reasonable to assume that this includes practically every telephone man—undoubtedly knows what carbon dust in arresters means. He has probably been exasperated many times with the fact that it is present in arresters, continually giving trouble and annoyance, and is very detrimental to high-class telephone service.

So universally known is the importance of this trouble that a manufacturer nowadays hardly attempts to put an arrester on the market without advertising it as being self-cleaning or free from carbon dust in one respect or another.

L. Q. Trumbull.

In order to get away from this carbon dust and particles of disintegration, some telephone companies use copper blocks instead of the carbon blocks, in arresters. The copper blocks, however, are expensive, and form lumps on their discharge surfaces on heavy discharges, or fuse together. This is very objectionable because of the fact that they cannot be properly used again in the arrester until the lumps are whittled off or the discharge surfaces dressed down.

The new form of arrester electrodes known as Metalodes, are said to entirely eliminate the objectionable carbon dust from lightning arresters, and at the same time provide the carbon body for taking care of extremely heavy discharges. The duplex metal plating on these electrodes entirely covers the carbon so that there is claimed to be no possibility of carbon dust or small particles of disintegration in the arresters, even after shipping or standing in service for a considerable length of time.

In service the discharge takes place across the dielectric from one metal surface to another, but, it is stated, there is not sufficient metal on these surfaces to form lumps thereon or to fuse the electrodes together upon the passage through the arrester of an exceedingly heavy discharge, as with thick metal electrodes. No matter how heavy the discharge, provided the electrodes are not entirely destroyed as may be the case with any arrester, the Metalode electrodes can always be utilized for further service immediately after the discharge, and will present clean metallic discharge surfaces for succeeding discharges.

With Metalodes, static electricity on the lines, due to atmospheric conditions or earth currents, does not cause, it is contended, disintegration of electrodes and the consequent line leakages.

With Metalodes, the arc does not have to break through any insulation, but takes place between metallic discharge surfaces of high conductivity. This is said to in-

sure a uniformity of operation of the arresters not found where discharge surfaces of very poor conductivity are used.

With Metalodes, the metal plating on the carbons provides metallic contact surfaces of high conductivity for the contact springs and ground plate, thereby eliminating the possibility of poor connections with the arrester. The outer plating on the electrodes is white nickel, which gives a very pleasing appearance and keeps them from tarnishing.

A flow of current through an arrester equipped with Metalodes does not heat the arrester, because the resistance of the carbons is short-circuited by the metallic plating covering them.

Metalodes were tried out a number of years ago, in telephone toll line service and elsewhere, with highly satisfactory results. They are not, therefore, new as to service, but their general introduction to the telephone field is new.

Mr. Parker has been identified with the Independent telephone movement since 1901, and with the development and manufacture of protective equipment for about the same period. He has made many inventions in the art of telephony, and a number on electrical protective apparatus. He has been in reality a successful inventor, and has also acquired some valuable patents.

He now proposes to place some of his patented devices on the market, beginning with Metalodes, and thus offer to the telephone public, as well as to others, the latest and most improved devices along certain lines, embodying his long and thorough experience and best capabilities.

He feels that in placing Metalodes on the market, he is rendering a great service to all telephone companies, in the form of greatly improving the quality of their service and in the saving of a great amount of unnecessary labor expended in cleaning arresters.

All that is necessary to do to equip arresters with Metalodes, is to pull out the carbons and slip in a pair of Metalodes. On toll lines and country lines, every time a carbon block arrester is cleaned a pair of Metalodes may be slipped in, and the job is done.

Metalodes, it is claimed, provide arresters with all of the good features of carbon electrodes and all of the good features of solid metal blocks or metal strips, but without any of the bad features of either.

Epoch-Making Inventions of the World.

The annual report of the Secretary of the Interior for the fiscal year ended June 30, 1915, says that during the past 50 years, the people of the United States have developed two-thirds of the revolutionary epoch-making inventions of the world, ranging from the telephone and the incandescent lamp to the Wright aeroplane and high speed steel. The list of those inventions is as follows. The electrical inventions are indicated by an asterisk:

Invention.	Inventor.	Date.
Telephone	Bell	1876*
Typewriter	Sholes	1878
Cash register	Paterson	1885
Incandescent lamp	Edison	1880*
Talking machine	Edison	1878
Electric furnace reduction	Cowles	1885*
Electrolytic alkali production	Castner	1890*
Transparent photograph film	Eastman	1888
Motion-picture machine	Edison	1893
Buttonhole sewing machine	Reece	1881
Carborundum	Acheson	1891
Calcium carbide	Willson	1888
Artificial graphite	Acheson	1896
Split-phase induction motor	Tesla	1887*
Air brake	Westinghouse	1869
Electric welding	Thomson	1889*
Type-bar casting	Mergenthaler	1885
Chain-stitch shoe-sewing machine	French & Myers	1881
Single-type composing machine	Lanston	1887
Continuous-process match machine	Beecher	1888
Chrome tanning	Schulz	1884
Disk plows (modern type)	Hardy	1896
Welt machine	Goodyear	1871
Electric lamp	Brush	1879*
Recording adding machine	Burroughs	1888
Celluloid	Hyatt	1870
Automatic knot-tying harvester machine	Appleby	1880
Water gas	Lowe	1875
Machine for making barbed wire	Glidden	1875
Rotary converter	Bradley	1887*
Automatic car coupler	Janney	1873
High-speed steel	Taylor & White	1901
Dry-air process for blast furnace	Gayley	1894
Block signals for railways	Robinson	1872
Trolley car	Van Depoele & Sprague	1884* 1887
Harveyized armor plate	Harvey	1891

Toll Lines Out of Service, Due to March Storm.

For the first week of March, as a result of a heavy fall of wet snow on the night of February 27, centering at Louisville, Ky., the telephone and telegraph companies and other concerns with wire systems have been operating under difficulties, a great deal of damage having been occasioned by the snow.

The storm extended only a short distance into Southern Indiana; reached to Henderson, Ky., on the west, Elizabethtown, Ky., on the south and Frankfort, Ky., on the east. The morning of February 28 found thousands of poles down in this territory and many others leaning far out of line, while, where the poles did not give way, the wires often broke.

The telephone companies were swamped by calls for attention to wires which were down and imported all the available linesmen from all districts outside the storm zone. On Monday of this week, the Central Home company at Louisville brought a dozen linemen from Indianapolis to lend a hand. For several hours on the morning of February 28 there was not a long distance wire out of Louisville in working order and toll lines all over the storm area were out of commission.

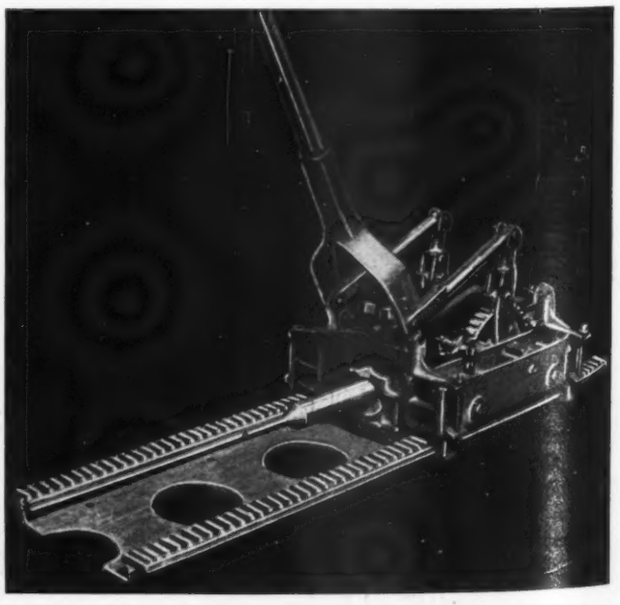
Minor R. Corman, superintendent of the Central Home company stated that a column of snow which adhered to the drop wire leading into his home at Louisville, measured 16 inches in diameter. Thousands of telephones were put out of commission by the breakage and a week elapsed before anything like satisfactory service was resumed generally.

At Frankfort, a Frankfort Home company cable and a Bell cable were broken in two by the weight of the snow and additional weight caused by other heavy and also snow-laden wires falling across them.

No estimate of the damage has been attempted although it is said that a result of the storm will require that practically every foot of all wire systems in the territory affected, will have to be gone over.

Saving Work in Laying Single Duct Conduit.

At times, every telephone company has to place some cable underground. Often the management has wished for some method by which a pipe could be forced through the ground from one point to another so as to avoid the tearing up of pavements and lawns and the doing of other necessary digging.



Special Type of Easy Pipe Pusher for Telephone Companies.

A device known as the Easy Pipe Pusher has been developed that will put in 30 to 150 feet of pipe any depth in an hour. It is said that it will put the pipe under paving, floors, streams and the most difficult places, just as swiftly and cheaply as out in the open. The speed depends upon the soil and the operators' willingness to work.

It is, of course, necessary to do some preliminary digging to use the pipe pusher, but it is claimed that it will save 75 to 85 per cent. of the digging which must ordinarily be done. For the ordinary work, a short ditch is required to set the machine to start. Where the pipe is to be pushed long distances, a small hole about 18 by 36 inches must be dug about every 50 to 75 feet. This is done in order to keep a straight line.

As shown in the illustration, the pipe pusher consists of a vise for holding the pipe, which travels on a cog track and is operated by a combination of gears and levers.

In the standard type of the pipe pusher, double compound leverage is provided and the power is delivered right on the pipe, enabling one man to push over four tons. Triple-back stop pawls take care of all of the back lash and spring of the pipe. The driving pawls are instantly reversible for pushing or pulling. The positive vise clamp on the pipe is easily set and released by a wrench. It holds the pipe in a straight line.

A special Easy Pipe Pusher, which is suitable for gas, water, telephone and light companies, is designed to handle pipe up to four inches in diameter on the push and it will enlarge a hole to an almost unlimited size. This type of pusher has triple gears and levers so compounded that the power that one man can push is about 40,000 pounds. It is a two-speed machine, the low speed being used for heavy work and the high speed for ordinary work.

One telephone company had to run a cable under one street of 100 feet in width and another street 70 feet in width. These streets were paved with brick and the company estimated the cost of doing the work, including the digging up of the pavement, would have been $175. With use of the Easy Pipe Pusher, the work was done very satisfactorily and the company saved over $100.

In doing this work a one-inch iron pipe was first pushed across the street under the pavement. This pipe was then pulled back three times, each time a large coupling being placed on the end of the pipe until a five-inch hole was left under the pavement entirely across the street. Fibre conduit with an outside diameter of four inches was then put through the hole and a lead cable drawn in.

In the 100-foot push, the pipe did not vary to one side over six inches and the manager of the telephone company is confident that the hole could easily have been enlarged to eight inches.

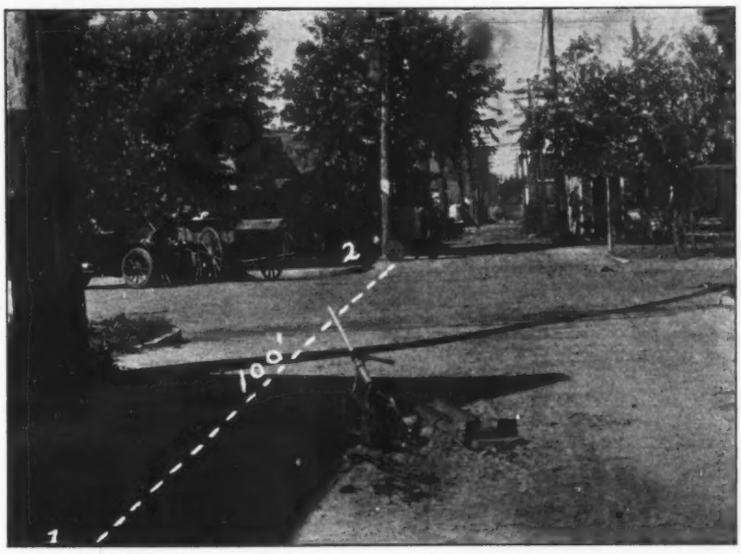
To make the holes under both streets required the services of two men for a little over two days.

One of the illustrations shows a street intersection where the Easy Pipe Pusher was used to place a four-inch, outside diameter, fibre conduit under the street without disturbing the pavement. The machine was set in a ditch at the point marked 1, just outside the paving line. A 1¼-inch pipe was then pushed under the pavement to the manhole across the street, 100 feet away. The total time to make the push, enlarge the hole and put in the conduit, which was set with compound, was less than one day for two men.

Another use for which telephone companies will find the pipe pusher adapted is crossing under railroad tracks. This may easily be done without disturbing the tracks or traffic thereon.

The pipe pusher may be used in winter as well as in summer. All that is necessary is to dig down below the frost line before starting operations.

The Easy Pipe Pusher is manufactured and sold by the Easy Mfg. Co., of David City, Nebr., which will be glad to furnish further information to those interested.



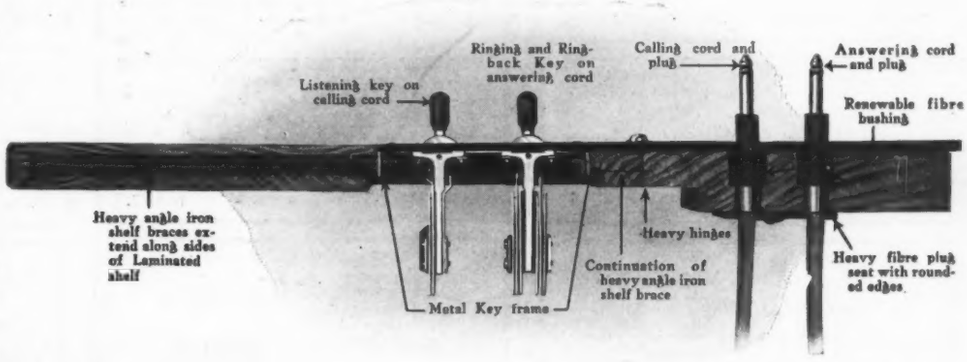
One Place Where the Easy Pipe Pusher Was Used.

The Standardization of Key Shelves of Switchboards.

An excellent example of advantageous standardization is found in the key shelves of the Kellogg one-position low type magneto switchboards.

This key shelf consists of two parallel wooden strips held apart the length of a standard key escutcheon, by means of heavy angle iron braces, which prevent splitting or warping. Along the inner edges are mounted grooved metal strips forming the key frame.

This construction does away with the old centered holes for mounting the keys, and allows the use of escutcheon plates which fit flush with the key-shelf surface. The escutcheons, whether carrying keys or blank, are held in place by a clevis which is drawn up into the grooved

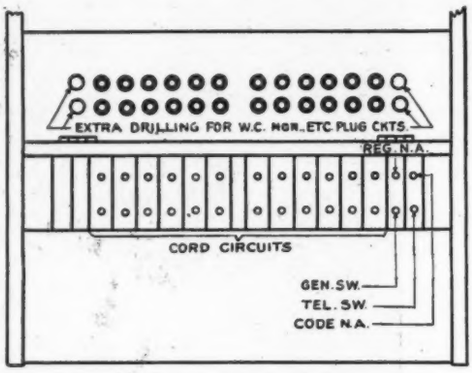

Ringing and Ring-back Key on answering cord
Calling cord and plug
Answering cord and plug
Listening key on calling cord
Renewable fibre bushing
Heavy angle iron shelf braces extend along sides of Laminated shelf
Heavy hinges
Continuation of heavy angle iron shelf brace
Heavy fibre plug seat with rounded edges.
Metal Key frame

The Key Shelf Arrangement of the Kellogg One-Position, Low-Type Magneto Switchboard.

key frame by means of screws through the escutcheon plate.

This method of building a key-shelf enables the same shelf to be used in equipping two different boards of each of the one-position sizes. It permits the equipment of any amount of the circuits available up to the capacity of the board.

The accompanying diagram illustrates the layout of this one-position shelf. At the left are located the reversing key and four-party master key. These keys are under the control of the operator's left hand, so that after learning the called-for party, she can set the proper party-line combination while reaching up to insert the plug in the jack and be ready to use the ringing key by the time the connection is established.



Layout of Kellogg One-Position Key Shelf.

At the right end of the shelf are the generator switching key, battery key and night alarm keys. These keys are seldom touched, and do not interfere with the operator handling her cords, etc., with the right hand.

The present tendency is to dispense with the battery switching key, and use battery contact springs on the listening keys. With the present high cost of dry cells, this practice is generally recommended.

In using this key shelf layout, standardization does not mean that the entire shelf must be equipped to full capacity on all occasions, but it means that a standard board will have the keys used located at the points indicated. By establishing a location for the apparatus the entire layout of a switchboard can be improved and simplified, because each piece of apparatus can be placed to the best advantage with reference to accessibility in assembling and future inspection.

The prices of Kellogg switchboards are based on the standard layout and any deviation jars the machinery of production, slowing up delivery and frequently raising the price of the board. Market conditions considered, the shipping record of Kellogg boards the past three months, is remarkable. If a new board is contemplated this spring, the Kellogg company states it can make very prompt deliveries.

McGraw and Hill Publishing Companies Consolidate.

The McGraw Publishing Co., Inc., and the Hill Publishing Co., New York, have been consolidated as the McGraw-Hill Publishing Co., Inc. The new company acquires all the properties and interests of the two constituents, including the following technical journals:

Electrical World, Electrical Railway Journal, Electrical Merchandising, Engineering Record, Metallurgical and Chemical Engineering, The Contractor, American Machinist, Power, Engineering News, Engineering and Mining Journal, and Coal Age.

Two of these papers, Engineering News and Engineering Record, will be consolidated under the name, Engineering News-Record, with Charles Whiting Baker, now editor of Engineering News, as editor-in-chief.

James H. McGraw will be president of the new company, Arthur J. Baldwin—now president of the Hill Publishing Company—vice-president and treasurer, and E. J. Mehren, vice-president and general manager.

Japanese Government Unable to Meet Demand for Telephones.

It is estimated that there are 150,000 persons and firms in Japan awaiting the installation of telephones on their premises, the government being unable to keep abreast of the demands for telephone service.

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